DOCUMENT RESUME

ED 431 291 EF 005 385

AUTHOR	Watson, Lucy; Wadsworth, Alison; Daniels, Richard; Wonnacott, Geoff
TITLE	Art Accommodation in Secondary Schools. A Design Guide. Building Bulletin 89.
INSTITUTION	Department for Education and Employment, London (England). Architects and Building Branch.
ISBN	ISBN-0-11-271029-8
PUB DATE	1998-00-00
NOTE	67p.; Colored photographs may not reproduce clearly.
AVAILABLE FROM	HMSO Publications Centre, P.O. Box 276, London, SW8 5DT England; Tel: 0171-873-9090; Fax: 0171-873-8200 (16.95 pounds).
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Art Education; Check Lists; Classroom Furniture; *Educational Environment; Educational Facilities Design; Foreign Countries; *Interior Design; Lighting; Secondary Education; *Secondary Schools
IDENTIFIERS	England

ABSTRACT

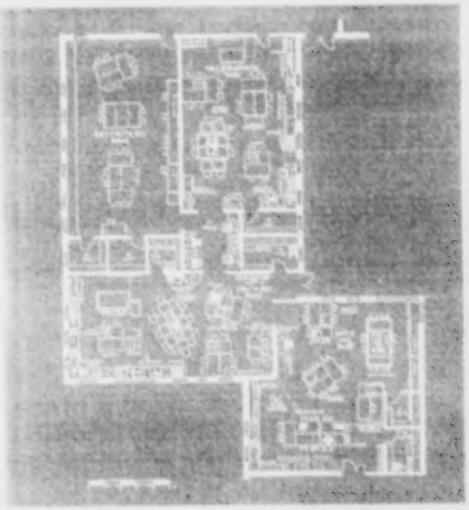
Schools vary in the way they choose to deliver their art curriculum, and this affects their accommodation needs. This document provides guidance on accommodation for art and design in secondary schools, concentrating on the needs of 11- to 16-year-old pupils. (No specific advice on the specific needs of special education students is provided.) Section 1 outlines the range of teaching and non-teaching spaces likely to be required and key planning issues. Section 2 describes each teaching and non-teaching space and illustrates furnished plans of typical spaces. Section 3 provides guidance on a typical range of furniture and suggests ways of using this to establish a flexible environment. Section 4 summarizes the main regulations, providing a reference for further reading and guidance on the lighting of art rooms. Section 5 describes new and adapted art departments in four existing schools. Finally, Section 6 covers general cost issues and includes a case study cost analysis. Appendices include a checklist and glossary. (Contains 29 references.) (GR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 431 291

Building Bulletin 89

ART ACCOMMODATION IN SECONDARY SCHOOLS



EF 005 385

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

John Birch

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Architects & Building Branch

Department for Education and Employment

D/EE

BEST COPY AVAILABLE

BUILDING BULLETIN 89

Art Accommodation in Secondary Schools

Architects and Building Branch
Department for Education and Employment

London : The Stationery Office

Acknowledgements

This publication has been prepared by the following team of DfEE Architects and Building Branch professionals:
Principal Architect: Lucy Watson
Senior Designer: Alison Wadsworth
Senior Engineer: Richard Daniels
Senior Quantity Surveyor: Geoff Wonnacott.

The following people were also closely involved as part of a project working group:
Grant Jones (Educational Consultant; Art Adviser, States of Jersey Education Dept).
HMI Peter Jones (OFSTED).
Tim Royle (Headteacher, Highdown School, Reading).

The Department is grateful to the staff of the four Case Study schools, for their co-operation and support as well as to all the other school staff and LEA officers who were so helpful on our many visits.

The assistance of the DfEE Design Studio is also acknowledged.

Photographic Acknowledgements

Cardinal Vaughan Memorial School, Kensington and Chelsea (front cover).
Lyall and Winter, Architects.

Christleton County High School, Cheshire (front cover).

Neston County High School, Cheshire (back cover and page 52).

Westlands High School, Cheshire (back cover).

Merrywood Boys School, Bristol (back cover).

St Angela's Ursuline Convent School, Newham (page 52).
David C. Rackham, Architects.

© Crown Copyright 1998.
Published with the permission of the DFEE on behalf of the Controller of Her Majesty's Stationery Office.

Applications for reproduction should be made in writing to The Copyright Unit, Her Majesty's Stationery Office, St Clements House, 2-16 Colegate, Norwich, NR3 1BQ.
ISBN 0 11 271029 8

Contents

Introduction	**1**
Section 1: Planning the Art Department	**2**
Section 2: Individual Spaces	**7**
Section 3: Furniture and Equipment	**24**
Section 4: Services and Environmental Design	**37**
Section 5: Case Studies	**41**
Section 6: Cost Guidance	**53**
Appendix 1: Check List	**56**
Appendix 2: Space around Furniture & Equipment	**58**
Appendix 3: Glossary	**59**
Bibliography	**60**
Key to Symbols	**inside back cover**

Introduction

This publication provides guidance on accommodation for art and design in secondary schools. The guidance is intended to assist all those who may be involved in the briefing and design process including teachers, governors, LEA advisers and building professionals. It discusses the issues that arise when considering both new and existing accommodation.

Art is a compulsory National Curriculum subject in Key Stage 3 (KS3). In Key Stage 4 (KS4) it is optional and the number of pupils taking an art and design GCSE varies from school to school.[1] Vocational and academic courses are available in the sixth form.

Schools vary in the way in which they choose to deliver the curriculum and this affects their accommodation needs. Local authorities and schools will establish their own building priorities in the light of the funds available, any conditions which may attach to those funds and their own assessment of needs. The guidance in this bulletin is not, therefore, prescriptive but it is hoped that it will provide a useful framework which is flexible enough to be applied to a range of different situations. The publication concentrates on the needs of 11 to 16 year old pupils but there is no specific advice about pupils with special educational needs. However, the general guidance will be applicable to all secondary schools and the case studies illustrate a range of school types including those with sixth forms.

It is suggested that the accommodation needs of art are considered in the context of the whole school curriculum and that both specialist advisers and building professionals, as well as the school, are involved with the analysis and planning.

The information in this publication begins with a broad outline of the accommodation requirements and is followed by more detailed information; a summary of the content is given here.

Section 1: Planning the Art Department outlines the range of teaching and non-teaching spaces likely to be required. It also outlines some of the key planning issues.

Section 2: Individual Spaces describes in detail each teaching and non-teaching space. It is illustrated by furnished plans of typical spaces.

Section 3: Furniture and Equipment provides guidance on a typical range of furniture and suggests ways of using this to establish a flexible environment. There is advice on making good use of typical equipment.

Section 4: Services and Environmental Design provides a summary of the main regulations and acts as a reference for further reading. Guidance on the lighting of art rooms is also included.

Section 5: Case Studies describes new and adapted art departments in four existing schools. Solutions are based on the guidance in previous sections.

Section 6: Cost Guidance covers general cost issues and includes a cost analysis of one of the case studies.

Appendices include a Check List, Bibliography and a Glossary of terms.

Note

[1] In 1997, the average figure for maintained schools in England was 34% of the year 11 cohort.

Section 1: Planning the Art Department

Art and design is a practical and creative subject in which pupils learn through investigation, observation, analysis and experimentation. Pupils work in both two and three dimensions and at a range of scales. They learn to use a number of different techniques in a variety of media.

1.1 The balance of specialisms varies but may include drawing, painting, printmaking and photography as well as textiles, ceramics and sculpture. Information Technology (IT) also plays an important part and is used both as a graphic tool and for research purposes. There may be multi-media projects such as animated film making or performance art. Pupils also learn about artists, crafts people and designers from different periods and cultures, and will take part in the evaluation of their own and others' work.

1.2 The activities that take place as part of the art curriculum can overlap with other departments, in particular design and technology (D&T). In textiles and graphic design, for example, resources, equipment and even space can be shared. There may also be links between art and drama although this is most likely to be for extended curricular activities such as designing and making stage sets for a performance or an event.

Teaching Spaces

1.3 The range of teaching spaces in an art department varies from school to school but typically includes spaces timetabled for whole-class teaching, occasionally supported by smaller untimetabled spaces. As with other subjects, pupils will also use central school facilities such as the library (which may house all the school's art books) or an IT room. The school grounds may also be used in fine weather.

Calculating the Number of Timetabled Teaching Spaces

1.4 The number of timetabled art spaces can be calculated from the total number of teaching periods in the subject.[1] The teaching periods vary according to group sizes, the curriculum percentage that is allocated to the subject and the number of pupils taking art at each Key Stage. The total number of pupils taking art will be affected by option choices at KS4 and, in an 11-18 school, how many students choose to take an art and design course in the sixth form.

1.5 Figure 1/1 shows the number of spaces that are generated by two typical curriculum models applied to 11-16 schools of varying sizes. Model A relates to a 40 period week where KS3 pupils have 2 periods (5%) of art per week. Model B relates to a 50 period fortnight and 3 periods per cycle (6%). The curriculum percentage at KS4 is 10% in each case. The effect of two different percentages of GCSE take-up is also shown: 25% and 50% of the year group. All models assume group sizes of 30 in KS3 and up to 25 in KS4, reflecting the current situation in most schools. These are theoretical examples; an individual school's organisation will need to be fed into such a calculation for a real project. A difference in group size, for example, affects the number and size of spaces required.

1.6 The table shows that small to medium sized schools will generally require two teaching spaces. Larger schools (over 1050) or those with a very high GCSE take-up may generate a third or fourth. The table also shows the average frequency of use of the spaces. This is the number of periods a room is used compared to the total number of periods it is available, expressed as a percentage. In specialist practical spaces, it is not always possible to organise the school timetable to achieve a frequency of use above 85%, and this is the maximum

Notes

[1] The calculated number of spaces for art is the total number of art teaching periods divided by the number of teaching periods in the cycle. 'Area Guidelines for Schools' (BB82), DfEE 1996 gives more details on the calculations.

Model A

Total PPW: 40
Art PPW:
KS3: 2(5%)
KS4: 4(10%)

25% take-up at GCSE

School Size	KS	TP	Total TP	No. Spaces Calculated	No. Spaces Rounded	f/use %	Notes
600	KS3	24					
	KS4	16	40	1.00	2	50%	low f/use
750	KS3	30					
	KS4	16	46	1.15	2	59%	low f/use
900	KS3	36					
	KS4	16	52	1.30	2	65%	
1050	KS3	42					
	KS4	24	66	1.65	2	83%	
1200	KS3	48					
	KS4	24	72	1.80	3	60%	2@90%
1350	KS3	54					
	KS4	24	78	1.95	3	65%	
1500	KS3	60					
	KS4	24	84	2.10	3	70%	

50% take-up at GCSE

School Size	KS	TP	Total TP	No. Spaces Calculated	No. Spaces Rounded	f/use %	Notes
600	KS3	24					
	KS4	24	48	1.20	2	60%	
750	KS3	30					
	KS4	24	54	1.35	2	68%	
900	KS3	36					
	KS4	32	68	1.70	2	85%	
1050	KS3	42					
	KS4	40	82	2.05	3	68%	
1200	KS3	48					
	KS4	40	88	2.20	3	73%	
1350	KS3	54					
	KS4	48	102	2.55	3	85%	
1500	KS3	60					
	KS4	48	108	2.70	4	68%	3@90%

Model B

Total PPF: 50
Art PPF:
KS3: 3(6%)
KS4: 5(10%)

25% take-up at GCSE

School Size	KS	TP	Total TP	No. Spaces Calculated	No. Spaces Rounded	f/use %	Notes
600	KS3	36					
	KS4	20	56	1.12	2	56%	low f/use
750	KS3	45					
	KS4	20	65	1.30	2	65%	
900	KS3	54					
	KS4	20	74	1.48	2	74%	
1050	KS3	63					
	KS4	30	93	1.86	3	62%	
1200	KS3	72					
	KS4	30	102	2.04	3	68%	
1350	KS3	81					
	KS4	30	111	2.22	3	74%	
1500	KS3	90					
	KS4	30	120	2.40	3	80%	

50% take-up at GCSE

School Size	KS	TP	Total TP	No. Spaces Calculated	No. Spaces Rounded	f/use %	Notes
600	KS3	36					
	KS4	30	66	1.32	2	66%	
750	KS3	45					
	KS4	30	75	1.50	2	75%	
900	KS3	54					
	KS4	40	94	1.88	3	63%	
1050	KS3	63					
	KS4	50	113	2.26	3	75%	
1200	KS3	72					
	KS4	50	122	2.44	3	81%	
1350	KS3	81					
	KS4	60	141	2.82	4	71%	
1500	KS3	90					
	KS4	60	150	3.00	4	75%	

Figure 1/1
Number of timetabled spaces for 2 models

Key

PPW = periods per week
PPF = periods per fortnight
TP = teaching periods
f/use = frequency of use
KS = key stage

sumed in these models. However, where 'rounding up' to the nearest whole number of rooms results in a frequency between 85 and 90%, this is shown as an alternative in the notes column (for example, a 1200 place school teaching model A with 25% GCSE take-up). Some of the smaller schools, such as those with 600 pupils and a 25% take-up at GCSE show a very low frequency of use (50-60%, noted on the table). If a space is timetabled for less than about 60% of the time, it is not being used effectively and may need to be used for other purposes.

In an 11-18 school, available periods may be used by sixth formers working in their own time and some schools may have an artist in residence. However, the art spaces will be viewed in the context of the whole school's accommodation and one of the spaces may need to be used for more than one subject. It is not unusual for a teacher to teach art and a related aspect of D&T (graphics, for example). In this case, the same space may be used for both subjects. Dual use of a space needs to be carefully planned; an example of this is illustrated in Section 5.

BEST COPY AVAILABLE

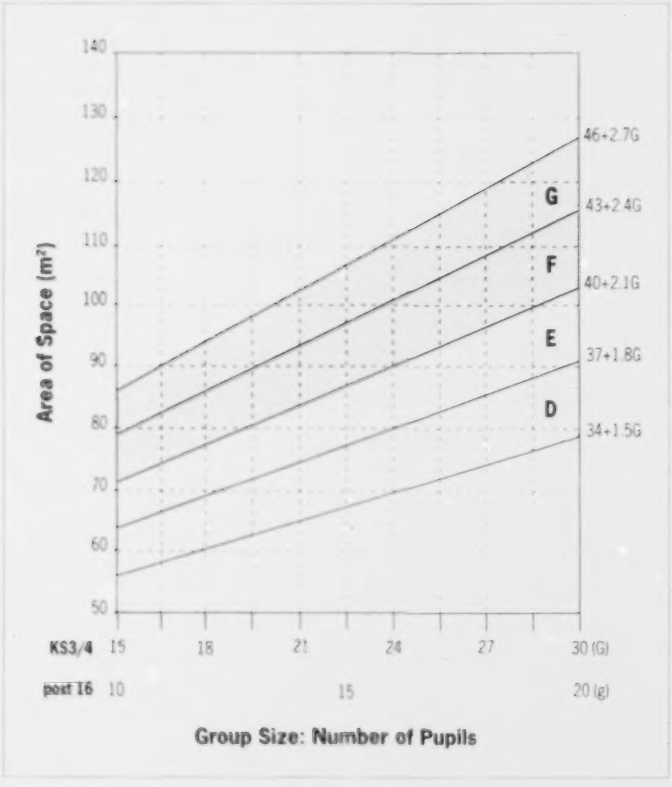


Figure 1/2
Area range for art according to group size

Size of Timetabled Teaching Spaces

1.7 A number of factors will determine the size of an art space[2] including:

- the maximum group size likely to use the space;
- how much specialist furniture and/or equipment there is;
- the range of activities taking place;
- the scale of art work being done.

1.8 As the range of activities in one space broadens, the area needed tends to increase. The scale of activities varies within each medium but generally two dimensional (2D) work such as drawing and painting takes up less space than three dimensional (3D) work, such as ceramics or sculpture. This is reflected in the graph in Figure 1/2 which shows an area range for all types of art space according to group size.[3] For 30 pupils, for example, the suggested area range is **79-103m²** (band D-E) where mainly 2D activities take place and **103-115m²** (band F) where there is a bias towards working in 3D or doing screen printing onto textiles. Further details on the size of these spaces are given in Section 2.

Supplementary Teaching Spaces

1.9 The number and type of supplementary teaching spaces will vary greatly between schools and some may be shared with other departments. These spaces are most useful if they are easily accessed by pupils and can be supervised indirectly by teachers. Some typical examples are noted below.

- A **resource area** where art books, slides and prints are kept for reference. Such an area may also house computers which may be used for graphics or research purposes (CD ROM).
- A **dark room** used for black and white photographic development, or as part of certain screen printing processes.
- **Preparation/cleaning areas** associated with activities such as ceramics or screen printing are sometimes provided in small rooms or bays adjacent to the main teaching spaces and may be accessible from more than one area. These areas may also be integral with the main teaching space.
- A **seminar space** where a group of pupils can sit and watch a film or slides away from the main practical area.
- An **IT area** providing a small number of computers locally for the department or faculty.

These are not necessarily separate places; for example, a resource area may be used as a seminar space and a local IT base. There may also be overlap with non-teaching spaces such as a staff base. A sixth form studio where students can work in their own time and leave unfinished work undisturbed may be desirable in schools with large sixth form departments.

Notes

[2] In an 11-18 school, size may also be affected by whether sixth formers will be working alongside younger pupils in timetabled time.

[3] The graph is based on the formulae shown alongside, where G (or g) = group size. It is extracted from 'Area Guidelines for Schools' (BB82), DfEE 1996.

Non-Teaching Areas

Storage and Display

1.10 Space will be needed for storing materials, equipment and pupils' work. This may be in the form of walk-in stores which are accessible from the classroom, or in the teaching space itself. The teaching areas given on the graph in Figure 1/2 allow for a certain amount of local storage (eg. below side benching). For storage space in addition to this, an average floor area (assuming full height storage) of **0.4-0.5m²** per workplace can be used as a guide.

1.11 Works of art by pupils and others are often displayed throughout the school; in the entrance hall and circulation areas[4] as well as in the teaching or resource areas of the art department. GCSE work may be exhibited in the summer term.

Staff Areas

1.12 A room where staff can keep pupil records and teaching resources or hold meetings and interviews is useful. This may be the head of art's office or a departmental or faculty base. In some instances, a staff area may also be the resource base accessible to small groups of pupils as well as staff (see paragraph 1.9).

Planning Principles

1.13 The location of an art department can affect the accommodation in a number of ways. Some of the main points are listed below.

- The quality and level of light is particularly important in an art studio; orientation, nearby obstructions and which floor level the room is on can all affect the amount of daylight reaching the space (see 'Lighting', Section 4).
- A ground floor location can enable direct access to a sheltered outside area which can be useful for external work or for messy or large scale projects.[5] However, if the building is more than one storey high, good daylight levels may be more difficult to achieve as rooflights cannot be used to supplement side windows.
- The view from a carefully placed window can be a source of inspiration.
- Wherever links across departments are likely, it is advantageous to locate relevant spaces close together to facilitate the sharing of resources. For example, there may be textiles rooms in both art and D&T which have overlapping resource requirements (see Figure 1/3, overleaf).
- Vehicular access for the delivery of bulky or heavy materials (eg. bags of clay) should be considered.

1.14 Figure 1/3 illustrates some of the planning issues to be addressed within the art department, irrespective of its location. This is a diagrammatic plan and is not intended to suggest a complete planning solution.

- As daylight is particularly important for art rooms, consider the depth of teaching spaces where lighting is only from side windows (see paragraph 4.14, Section 4).
- The grouping of art rooms into a suite facilitates teacher interaction and allows for more efficient use of materials and equipment. It also gives all pupils equal access to any shared facility such as a resource area.
- An area for the display of pupils' and other artists' work provides an important learning stimulus as well as creating a welcoming approach to the department. This may also form part of an end of year exhibition of GCSE and A-level work.

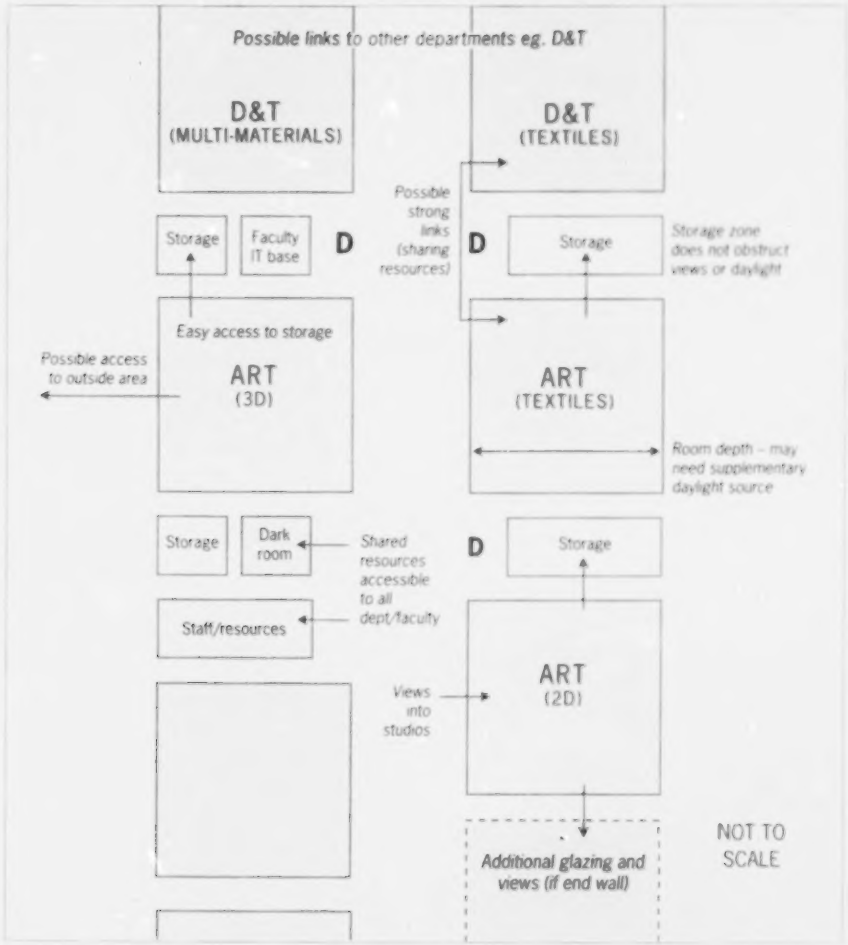
Notes

[4] In certain circumstances, display is not permitted in circulation routes, for fire safety reasons. Refer to 'The 1997 Constructional Standards', DfEE and The Building Regulations (Approved Document B), DoE 1991.

[5] An external workspace will be most useful if the floor surface is hard and well drained and there is access to services.

Figure 1/3
Planning principles to be considered

Key
D = possible display area



- Store rooms should be accessible from the teaching space but locations that obstruct incoming views or daylight should be avoided.
- Untimetabled spaces should be located to maximise shared use and allow supervision. For example, there may be a resource area between two art spaces or an IT area between art and D&T departments.
- Views into an art studio from a circulation area can provide an attractive 'shop window' into the department.
- As with any school building the possibility of future adaptations should be borne in mind when considering the structure and the location of services.

1.15 Suites of art spaces are sometimes designed as open-plan areas. Such an arrangement can create a sense of light and space. Less definition between areas can also increase flexibility; there may be specialist bays for activities such as screen printing which are shared between classes. However, noise transmission can be a problem in open-plan areas and in the case of ceramics, dust is less easily contained. It may also be worth noting that a more open-plan design can reduce the wall surface area which is useful for vertical display, storage and as a large scale work surface.

Section 2: Individual Spaces

This section is divided into three parts: **timetabled teaching spaces, supplementary teaching spaces and non-teaching spaces.** It looks at achieving the right environment for teaching art and design and suggests a planning strategy for organising a teaching space which can accommodate a range of activities.

Timetabled Teaching Spaces

Activities

2.1 The range of activities in any one area will depend on the number of timetabled spaces in the department and the way in which a school chooses to organise the curriculum. For example, a very small school with only one art room may accommodate a wide range of activities (painting, drawing, fabric printing and sculpture) in one space.[1] In a larger department, it is generally more economic to equip each space to reflect a different emphasis, 2D, 3D or textiles, for example. 2D art can involve pupils in drawing, painting, and printmaking (Figure 2/1a). In a large department there may be two 2D art spaces – one general studio and one dedicated to printmaking. In a room with a 3D bias, pupils will construct with a range of materials including card, textiles, wire, plaster and clay (Figure 2/1b, overleaf). In a textiles space, the principal medium is fabric and activities include screen printing, batik and appliqué (Figure 2/1c, overleaf). Pupils work individually or in groups of varying sizes.

Note

[1] A multi-media space needs careful management to ensure success. It is always important to consider material compatibility when designing specialist spaces, for example, clay dust could spoil other artwork.

Figure 2/1a
2D art – print making

Figure 2/1b
3D art – Clay work

Figure 2/1c
A range of textile activities

2.2 There are a number of practical and non-practical activities which take place in every space, irrespective of media. These include:

- a whole class clustering informally around the teacher for an introduction to a topic or the demonstration of a new skill (Figure 2/2a);
- individual pupils drawing and painting (from still life display, imagination or other source) as preparation for a range of outcomes (Figure 2/2b);
- the whole class gathering to look at slides or watch a video, take part in a seminar led by the teacher or evaluate a piece of work (Figure 2/2c, overleaf);
- searching for and studying resource material including books or slides (either or both activities may take pupils somewhere outside the art room, such as to the staff base);
- using a computer, individually or in pairs, to do graphic work or to search for information using CD ROM (again this may take pupils away from the art studio).

2.3 There are many ways in which design – through building form, surface finish and furniture layout – can contribute towards a stimulating and attractive teaching environment for art and design. As art is an essentially visual discipline and display forms a critical part of the learning experience, good daylight levels should be borne in mind when designing the accommodation.

Figure 2/2a
A teacher demonstration

Figure 2/2b
Drawing as preparation

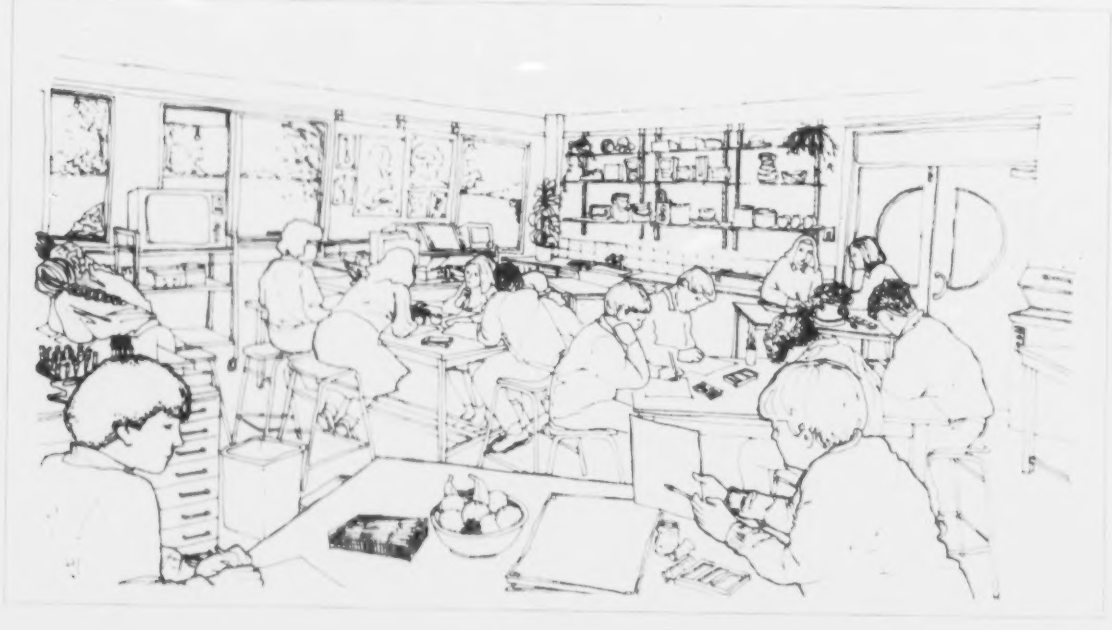


Figure 2/2c
A whole class seminar

Size of an Art Studio

2.4 The size of an art space will relate to the scale and type of activity and the extent of specialist furniture and equipment. The broad area ranges given in paragraph 1.8, Section 1 are explored further here in relation to the three main disciplines. All areas assume group sizes of up to 30 pupils and allow for a certain amount of local storage.

- **General 2D work** (range: 79-103m²): 85-95m² will accommodate 30 pupils engaged in a broad range of 2D art activities alongside the non-practical events such as class discussion, described in paragraph 2.2. An area of 79-85m² may also be suitable but the range of practical activities may be reduced; an example is shown in Section 5. Where graphic printmaking activities take place an area of 95-103m² may be required to accommodate additional equipment and materials.
- **3D work** (range: 103-120m²): 103-110m² will accommodate pupils working in 3D with a range of media (often at a large scale). If clay work is included, an area of 110-120m² may be needed to allow for the additional equipment generally associated with the activity.[2]
- **Textiles** (range: 103-115m²): 103-110m² is appropriate for a broad range of textiles-based activities including regular use of a screen printing table. A department with a particularly strong bias towards textiles may have a wide range of facilities including two or three screen printing tables, a large washdown area and computers for design work. Such a space may have an area of 110-115m². Where a screen printing table is unlikely to be permanently set up in a textiles room (a removable table top can be provided for occasional use, see Section 3) a space of 85-95m² may be suitable.

Note

[2] 'Area Guidelines for Schools' (BB 82), DfEE refers to the middle of Zone F-G on the area graph (Figure 1/2).

Shape of an Art Studio

2.5 The most attractive environments for teaching art are often those with a sense of light and space. Ceiling height contributes to the amount of daylight reaching a room as well as giving an impression of spaciousness. A high ceiling[3] can also provide additional space for long term storage and for hanging a display of pupils' three dimensional work (access to this will need consideration).

2.6 The shape of a space should not restrict its flexibility. A regular plan shape, with minimal indentations is usually the most flexible. It allows for a number of variations in furniture layout and is the easiest to supervise. The depth of a space will need to allow for side benching and central tables with adequate circulation between. Variations in furniture layout may be more difficult to achieve with a depth of less than 7m. A space which is very long may be more difficult to supervise. A proportion of between 1:1 and 1:1.6 can be used as a guide. In a room which is only lit by side windows, room depth will have to be balanced against the need for good daylighting. If a space is too deep, daylight will not reach the back even if the glazing is extensive. The lighting of an art studio is discussed further in Section 4.

Surface Finishes

2.7 The three main factors influencing the choice of finish in an art studio are light reflectance, maintenance, and safety. The first of these is particularly important in an art studio, where the observation of colour and texture are part of learning (see 'Lighting', Section 4). Dark colours which have low reflectance values can reduce the illuminance level in a room significantly. Thus a space where walls are finished in dark unpainted brickwork for ease of maintenance will be darker than one where the walls are painted in light colours. However, wall colours can be difficult to control in an art room where a good deal of wall surface may be covered in display[4] or in some cases used as an additional work surface. It is particularly important, therefore, to paint ceilings white or a very light colour, for maximum light reflectance and to choose light surfaces for tables and benching (see Section 3). Wall finishes above benches and sinks will need to be washable, as will walls behind potter's wheels and pug mills. Floors should be slip resistant and of a colour which is serviceable but not too dark. They will need to be washed down regularly and in areas where clay work takes place it is essential that they can be thoroughly wetted to dampen clay dust and there should be provision for a drain. Clay tiles and coved skirtings are often used in these areas because they provide a very hard wearing surface that can be frequently washed down; slip resistant heavy duty vinyl may also be used. Tiles may be more expensive than some vinyls.

Planning the Furniture Layout

2.8 An art space will need to be furnished and equipped to accommodate the common activities described in paragraph 2.2 and a combination of specialist activities. There needs to be space for both two and three dimensional display, pupils' work (in progress and completed), objects for use in still life arrangements and examples of the work of professional artists.

2.9 It is worthwhile producing furniture and equipment layouts for every teaching space early in the design process in consultation with users and advisers. The drawings can be used to assess the suitability of the proposed layout within the available area and to decide the location of services. The furniture layouts in this section (Figures 2/5 to 2/7) and throughout the document are designed around a planning framework which aims to provide a usable and flexible space that can accommodate different activities without difficulty.

Notes

[3] ie. a ceiling of more than about 3m (assuming a flat ceiling).

[4] The colour of the display board itself should also be considered.

Figure 2/3
Planning zones

2.10 The main aspects of the planning framework are listed below and the principal planning zones are illustrated diagrammatically by Figure 2/3.

- The general work table for two pupils is 1.5 x 0.75m, providing each pupil with a minimum of 0.56m² of work surface.
- Fixed furniture and equipment is minimised and located along perimeter walls while the central area contains loose furniture. This allows for re-arrangement to accommodate changing activities.
- Fixed perimeter benching is limited as far as possible to two walls and zoned into a wet area for preparation and cleaning and a dry area for storage and use of powered equipment.
- One wall acts as a teaching focus and includes a space for at least one computer. This is, as far as possible, positioned at 90° to the window wall to minimise reflections onto the whiteboard or screen.
- Computer(s) are located near to the entrance where they can be accessed easily allowing them to be moved between spaces, if required.
- There is a place near to the entrance where coats and bags can be left away from the main areas of activity.
- Doorways into store rooms are kept clear of all fixed furniture and equipment.
- Specialised furniture and equipment or messy activities (eg. clay preparation) are shown farthest from the classroom entrance.
- Local class-based storage is provided for keeping a proportion of pupils' work, tools, materials and objects for display (see 'Storage and Display', Section 3). Mobile storage units are located under the perimeter benching, making the best use of the available floor space, and shelves are provided above the benching where possible.
- Display boards, provided on every available wall, are assumed to be full height[5] to maximise available space.
- Sufficient space is allowed around furniture and fixed pieces of equipment to ensure adequate circulation around the room. The dimensions used are given in Appendix 2.

2.11 Figure 2/4 illustrates in more detail the organisational philosophy that informs the perimeter furniture layouts. Although based on the particular needs of a 2D art room, (see Figures 2/5a & b) many of these principles apply equally to the textiles and 3D art rooms which follow.

Generic Layouts

2.12 The following furniture layouts (Figures 2/5-2/7) illustrate the application of the planning framework (paragraph 2.10) to three spaces each with a different specialist emphasis: **general (2D) art, textiles and 3D art** (including clay). All these spaces can accommodate common activities such as class discussion, presentation, research and drawing. Each is designed for up to 30 pupils.[6]

2.13 The rooms are assumed to be on the ground floor and a door to an outside area is shown. Internal doorways have an additional half-leaf to allow for moving large pieces of furniture or works of art

Notes

[5] Consideration must be given to the means of reaching high-level wall displays.
[6] These room layouts are based on a maximum group size of 30 but each school needs to be individually assessed.
[7] See paragraph 1.15, Section 1, for further discussion on open planning.
[8] The possibility of a space being shared between art and D&T is discussed in Section 1. The furniture layout of such a space will need to be designed to accommodate the differing requirements of each subject and varying group sizes. An example is a room which may be used partly as a 2D art studio and partly for graphics courses requiring drawing boards and computers (see Section 5, Case Study 1). In some schools, textiles is taught entirely through D&T and there are no textiles facilities in the art department. In others the reverse may occur.

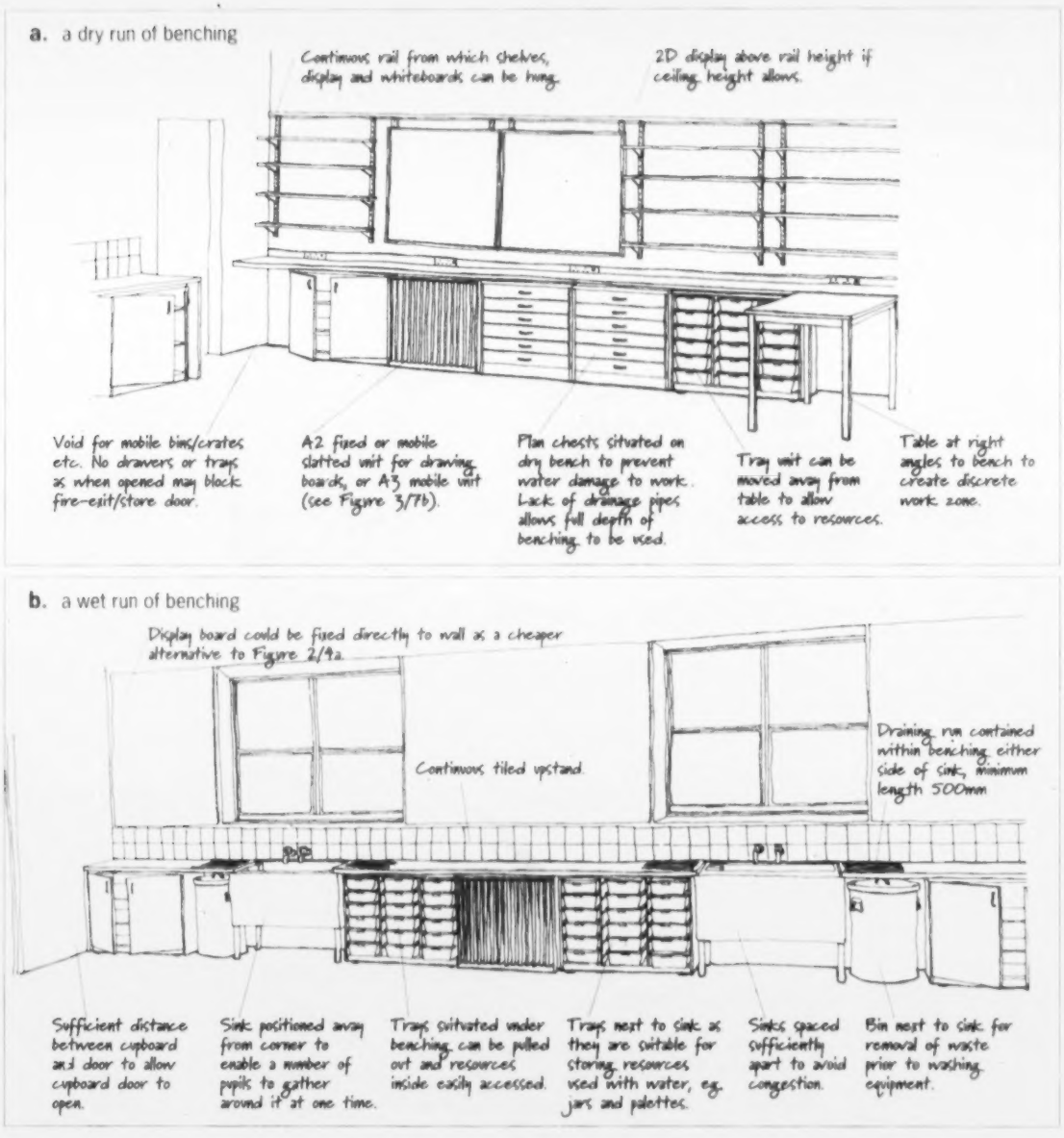

a. a dry run of benching
Continuous rail from which shelves, display and whiteboards can be hung.
2D display above rail height if ceiling height allows.
Void for mobile bins/crates etc. No drawers or trays as when opened may block fire-exit/store door.
A2 fixed or mobile slatted unit for drawing boards, or A3 mobile unit (see Figure 3/7b).
Plan chests situated on dry bench to prevent water damage to work. Lack of drainage pipes allows full depth of benching to be used.
Tray unit can be moved away from table to allow access to resources.
Table at right angles to bench to create discrete work zone.
b. a wet run of benching
Display board could be fixed directly to wall as a cheaper alternative to Figure 2/4a.
Continuous tiled upstand.
Draining run contained within benching either side of sink, minimum length 500mm
Sufficient distance between cupboard and door to allow cupboard door to open.
Sink positioned away from corner to enable a number of pupils to gather around it at one time.
Trays situated under benching can be pulled out and resources inside easily accessed.
Trays next to sink as they are suitable for storing resources used with water, eg. jars and palettes.
Sinks spaced sufficiently apart to avoid congestion.
Bin next to sink for removal of waste prior to washing equipment.

Figure 2/4 a&b
Perimeter benching layouts

Perimeter electrical services are assumed. Detailed information on the furniture and equipment shown on these layouts can be found in Section 3.

2.14 These plans show typical examples but they are not intended to be the only solutions. Some schools may have more multi-purpose spaces (see paragraph 2.1), others do not teach clay work as part of constructional art. The spaces illustrated here are self-contained but the principles can be applied to more open-plan approaches.[7] Other layout examples are shown in the case studies (Section 5).[8] Activities are noted on the plans to indicate the range of possibilities but these are neither intended to suggest activity zones nor that all the activities would necessarily take place simultaneously.

BEST COPY AVAILABLE

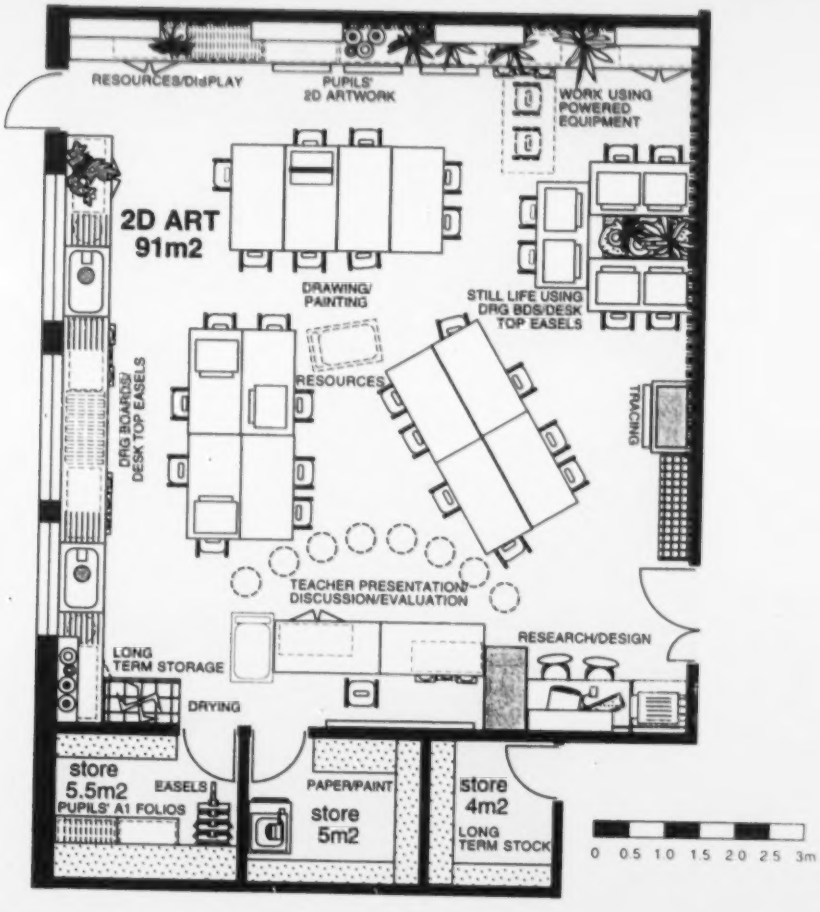


Figure 2/5a
A general (2D) art studio

A General Art Room (Figures 2/5 a & b)

2.15 Figure 2/5a shows a general art room of 91m² where pupils are engaged in a range of activities including a small still life. Figure 2/5b shows the same space with the furniture arranged for a different lesson involving the whole class in a large scale still life. This illustrates how the planning framework described in paragraph 2.10 can be followed to achieve flexibility. Key points to note about the space are given below.

- The dry run of benching is situated on the wall away from sinks. It is primarily intended for storage and houses plan chests for paper and pupils' work as well as vertical racks for storing drawing boards. Shelving, for storage and display, is concentrated above this area. The majority of power points, allowing pupils to use glue guns etc. are along the dry bench, away from the wet area.
- The second run of benching is the preparation and cleaning zone, containing two Belfast sinks with drainers each side for pupils' palettes, brushes and water jars. The sinks are spaced well apart to avoid congestion. Underbench cupboard units contain a mixture of trays and shelves for materials and utensils. Drawing boards are housed in vertical racks.
- Gaps are left between the underbench storage units in the cleaning zone to accommodate bins and large objects. Refer to Figures 2/4 a&b for further detail on the layout of side benching.

BEST COPY AVAILABLE

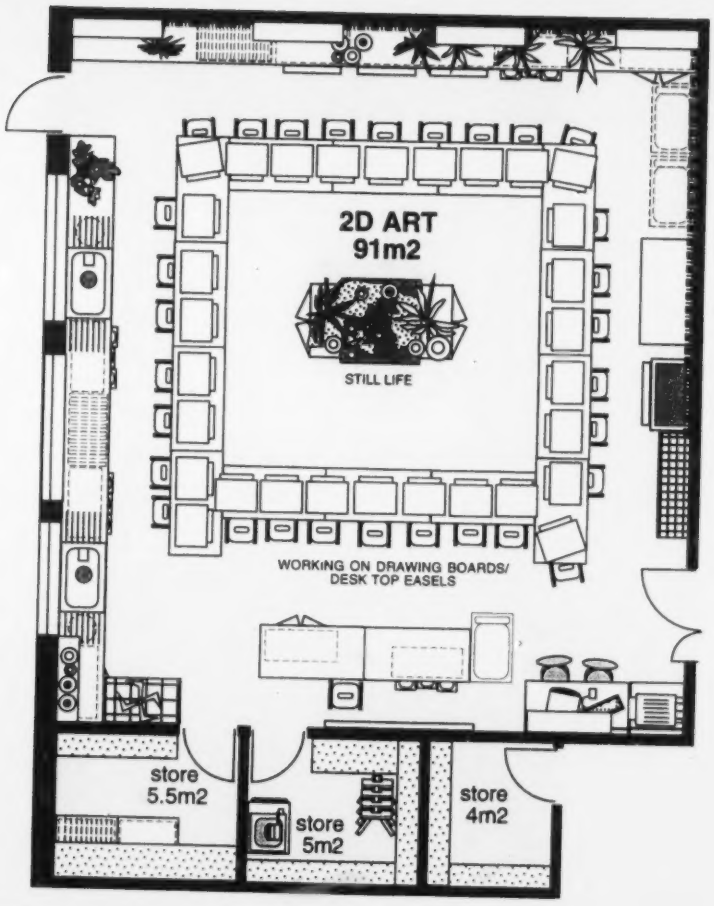


Figure 2/5b
A general (2D) art studio – a whole class still life

- 1.5 x 0.75m standing height tables[9] provide the main work surfaces for two pupils, while two extra tables provide a teaching focus for display and demonstration. Two 1.2 x 0.6m sitting height tables have a variety of uses including as a layout space next to the computer and for still life displays.
- The large still life in Figure 2/5b is set up using the (mobile) cupboards from under the side bench and two 1.2 x 0.6m tables. The still life in Figure 2/5a is assumed to be a longer term arrangement and is set up at the edge of the space away from the main areas of activity, where it will not be disturbed.
- Resource trolleys which give pupils easy access to materials such as paints and pencils are shown in various parking positions including alongside the teacher's table. They can be kept in a storeroom when not in use.[10]
- An A1 floor standing tiered rack, for drying paintings, is positioned away from sinks and close to the teaching base for supervision at the end of a lesson.
- The three adjacent store rooms contain: A1 portfolios of pupils' work; paper and other consumable resources; equipment such as an OHP; drawing boards and easels. One store, which opens off the corridor and can be shared with other art rooms, contains stock which is not accessed every day - Figure 2/10 illustrates planning issues for store rooms.

Notes

[9] For standing height recommendations, see 'Tables and Benching', Section 3.

[10] Where furniture is mobile, it is worth considering an alternative parking location, to ensure flexibility.

BEST COPY AVAILABLE

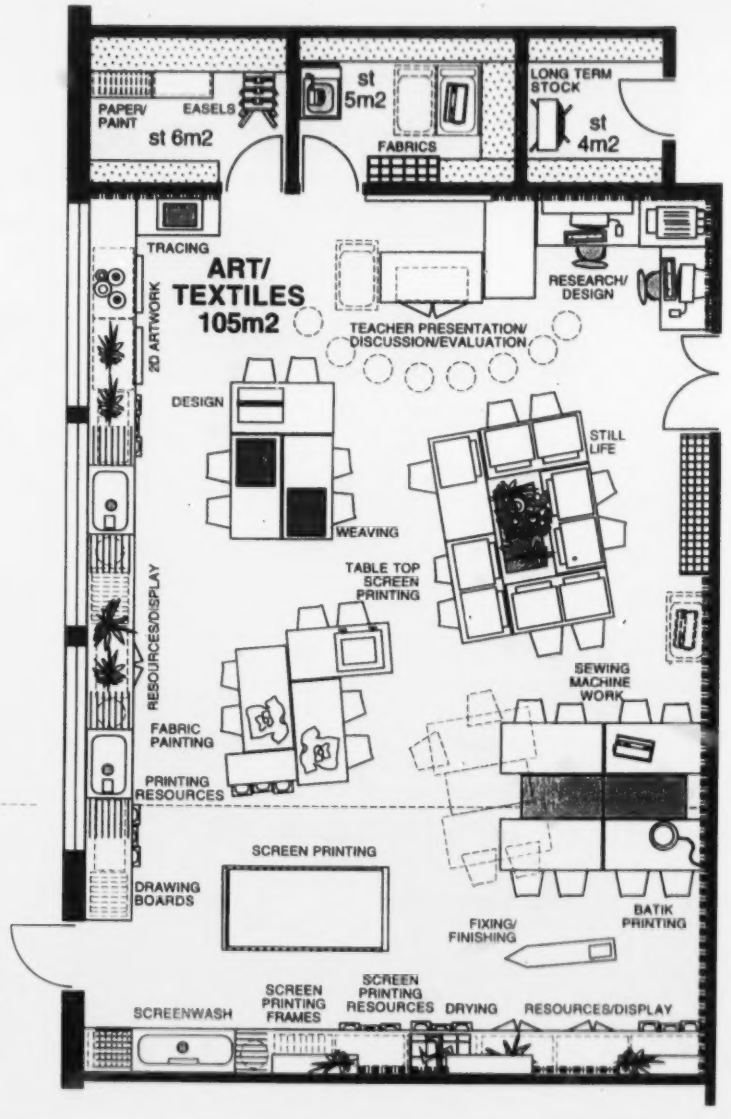


Figure 2/6
Textiles studio

Textiles Studio (Figure 2/6)

2.16 This art room contains specialist equipment for a fairly typical range and extent of textiles activities including screen printing, weaving, batik and sewing by hand and machine. It will also be used for a number of general art activities and is therefore furnished to accommodate them. The layout follows similar principles to the general art room; the following summarises the main additional features.

- The most specialised screen printing facilities are concentrated at one end of the space, away from the entrance. A run of benching houses a long washdown sink for washing printing frames; textiles resources are stored in cupboards and tray units below. The second length of benching houses two general purpose sinks,[11] with drawing boards and plan chests stored beneath.

Note

[11] Traps are provided to catch silt from inks and dyes.

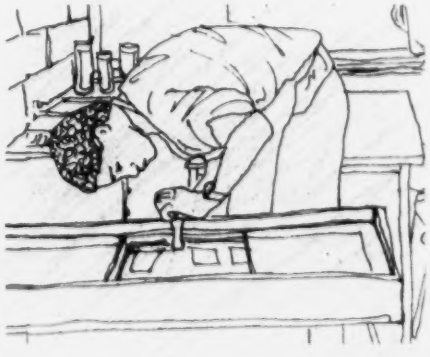
BEST COPY AVAILABLE

- Unlike the 2D art room, the 1.5 x 0.75m tables are at sitting height to better accommodate the range of activities taking place in this area (see 'Tables and Benching', Section 3). The 1.2 x 0.6m tables can be used for still life displays and sewing machine work. Small scale activities such as table-top weaving and hand sewing can take place at any of the central tables. Two computer workstations are shown for design work and the preparation of screen printing stencils.
- A screen printing table (for printing onto fabric) is located away from circulation routes to avoid pupils being jogged while setting down a print. The location also ensures that the rest of the space can be re-arranged to suit different activities while the table remains in place. Pupils can access all sides of the table for printing. When not in use the table may be covered to provide an additional surface (see 'Tables and Benching', Section 3). Printed textiles can be aired on an overhead rack (not shown) or on the bench mounted tiered rack, depending on size.
- The long washdown sink is positioned near to the printing table and well away from other areas of activity. Nearby windows can be opened during cleaning if necessary (see 'Ventilation and Heating', Section 4). A rack above (not shown) allows large pieces of fabric to drip-dry after washing or dyeing. Screens are stored beneath the bench, adjacent to the sink.
- A group of tables is shown against the wall where pupils can do activities involving serviced equipment. This arrangement may be preferable to working at a side bench for activities such as batik because it allows a group of pupils to work close to the melted wax which is heated in small electric pots.[12] This layout also enables pupils to access three sides of a large piece of fabric.
- Sewing machines, which may be used for appliqué, embroidery or constructing items in fabric, can be brought in on a trolley (shown dotted) and used on tables positioned at 90° to the wall. Two adjacent tables are shown dotted to indicate how they might be moved to give room for fabric when pupils are sewing.
- An iron and ironing board (positioned to allow adequate working space) are used for preparing fabrics before printing, finishing off final pieces of work or removing wax used in the batik process. The adjacent run of benching, suitably covered, may also be used.
- The store rooms house (amongst other things) portfolios and fabric. Cut lengths of fabric can be kept on shelves and rolls of fabric can be stored vertically (see 'Storage and Display', Section 3). A parking place for a trolley (useful for bringing small scale resources into the studio) is shown in one store.

2.17 Some of the facilities shown here are usually provided in a D&T (textiles) space too. If such a space is nearby, there could be some sharing of resources and the size of the art space could be reduced (see Case Study 1, Section 5).

Note

[12] A good supply of perimeter socket outlets provides the flexibility to be able to work in different parts of the room.



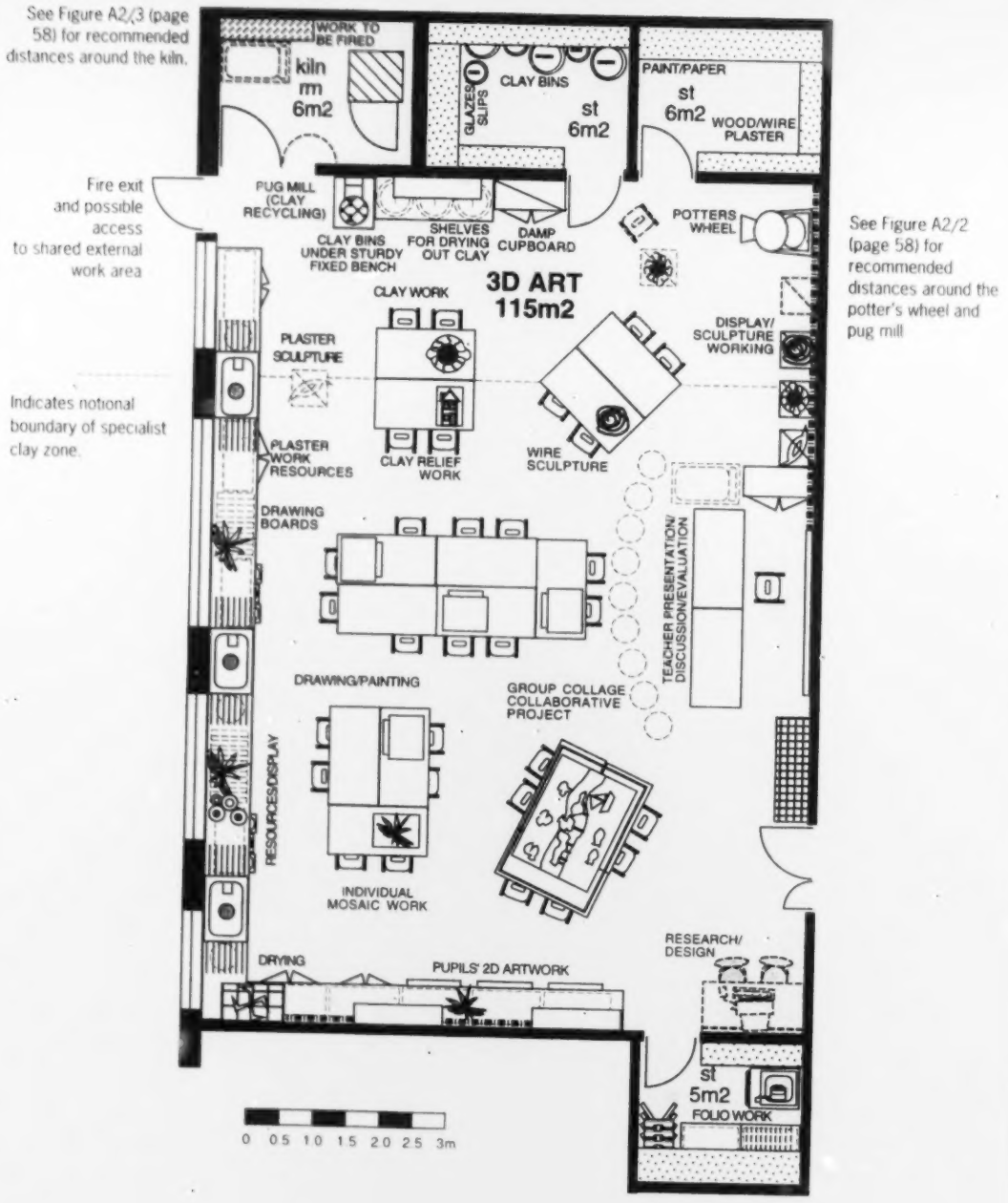


Figure 2/7
A 3D art studio

BEST COPY AVAILABLE

A Three Dimensional Art Studio (Figure 2/7)

2.18 In this space the bias is towards three dimensional work using a wide variety of materials. The range of materials used in the construction of artefacts can include wire, card, plaster and clay. Facilities for clay are shown in this example although not all schools provide them.[13] The layout is based on the same planning principles as the other art rooms and caters in the same way for general activities alongside the specialist 3D. Particular points to note about this layout are listed below.

- The preparation/cleaning bench along the window wall contains three sinks with clay traps.[14] Underbench cupboards provide storage for utensils and pupils' work. Glazes may be mixed along this bench.
- The 1.5 x 0.75m tables are at standing height which is appropriate for construction and clay work (see 'Tables and Benching', Section 3). A parking position (shown dotted) for a computer allows it to be brought into the room when required. It is positioned near to the door and away from the preparation area.
- As the centre of the space is free of fixed furniture, an area can be cleared readily to allow the floor to be used for large scale three dimensional work such as sculpture. Pupils can bring one of the one metre high stands (shown against the wall) into the centre of the room to work on a smaller piece of sculpture. These stands may also be used for display.
- In order to manage clay dust more easily, an area furthest from the entrance is designated a clay preparation area (shown dotted on the plan) where the pug mill (for reconstituting used clay) is housed. A pottery wheel[15] is also located here, away from circulation routes and with sufficient space on each side (see 'Equipment', Section 3 and Appendix 2). The clay store and kiln room (which has a one-and-a-half-leaf door to allow for installation/replacement of the kiln) are adjacent.
- There is sufficient space around the pug mill to ensure safe working distances (see Appendix 2). The adjacent fixed, sturdy bench is useful for preparing pugged clay for classwork and can be used for wedging[16] clay if required. Before going through the pug mill[17] used clay is soaked in bins below the bench until saturated and then dried out on plaster bats on the shelves above. A damp cupboard houses clay work in progress, located well away from any heat source such as the kiln (see 'Storage and Display', Section 3).
- Shelves in the kiln room[18] are used for drying finished products before firing and fired products prior to glazing. Refer also to paragraph 3.36.
- One store holds raw clay, soaking clay, glazing additives and associated implements. A second store houses dry materials including wood, wire and plaster (see paragraph 2.31 on clay and plaster storage). The third store is for general resources, equipment and pupils' portfolios.
- As the whiteboard is shown opposite the window wall, blinds may be needed to avoid problems of light reflection. An alternative to this would be to use a mobile whiteboard at one end of the room.

Notes

[13] In a new art department, it may be worth considering the possibilities of clay work taking place in the future even if it is not planned for initially.
[14] Large traps are also advisable for other art room sinks (see Section 4).
[15] A wheel is often unnecessary as many schools only do hand throwing.
[16] See Glossary.
[17] A pug mill should only be used by a member of staff (see Section 3).
[18] The kiln is kept in a separate room for safety reasons (see 'The Kiln Room', page 23).

BEST COPY AVAILABLE

Supplementary Teaching Spaces

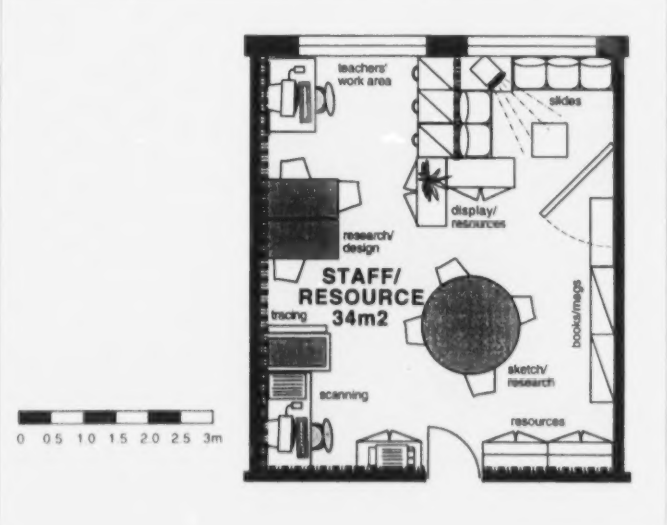
2.19 Supplementary teaching spaces are very varied and often overlap with non-teaching spaces. A departmental base, for example, may serve as staff office, book resource and seminar room. Section 1 lists a few examples of supplementary spaces and two of these are illustrated here (Figures 2/8 and 2/9); other examples are shown in the case studies.

A Resource Area (Figure 2/8)

2.20 A school may have a resource area where pupils can go in small groups and study away from the messier environment of the classroom. Teachers may also wish to take a small group there for extended curricular activities. Figure 2/8 shows an example of a resource area which is combined with a staff base. Although a corner of the room is defined (by furniture alone) as a teachers' area the space as a whole is perceived as dual-purpose; the resource area can be supervised indirectly from adjacent spaces. The main features of the layout are summarised below.

- Shelves house art reference books and magazines, and a plan chest holds paper and prints. Inspirational material - objects of interest that pupils can choose to work with there or in the studio - may also be kept there.

Figure 2/8
A staff/resource area



- Sitting-height tables allow pupils to spread out prints, look at large books or sketch (resources are kept in nearby cupboards). Alternatively, they can sit comfortably on easy chairs. The light box can be used for tracing.
- Two computers are shown, one used for research on CD ROM and the other principally for staff use. The former is on a trolley and can be wheeled into a teaching space as necessary. A scanner allows illustrations or prints to be scanned and there is a (colour) printer.
- Lockable filing cabinets in the teachers' area contain pupils' records and worksheets. Slides may also be kept here and either viewed by individuals or groups. A projection screen can be swung out from the wall.

A Dark Room (Figure 2/9)

2.21 Photography may be part of the art curriculum or it may be an extended curricular activity, taking place at lunchtime or after school. Development facilities may also be used by other departments and the room may be used for optics experiments in science. The size of a dark room varies depending on the part photography plays in the school curriculum but group sizes do not usually exceed eight. The photographic development process divides roughly into four phases.

1. Processing the film.
2. Exposing the film on to photographic paper to produce contact prints (ie. same size as the negative).
3. Exposing a chosen frame onto photographic paper and enlarging it.
4. Developing and fixing the photograph.

2.22 Figure 2/9 shows an example of a dark room for up to five pupils. A lobby acts as a light lock. If space is limited, a red warning light can be used to discourage entry (see 'Lighting', Section 4). There are two separate runs of benching: a 'dry' run for the enlargers and a 'wet' one for

developing and washing prints. The following describes the way activities are accommodated.

- A run of benching provides a general preparation surface for film processing, viewing negatives and chemical mixing (by the teacher). There are cupboards above for storing resources.
- Processed films are rinsed in the adjacent sink and dried in a full height electric drying cabinet.
- A processed film is exposed onto photographic paper using one of the five enlargers. Screens create separate booths to avoid light seepage from an adjacent enlarger spoiling an exposure. A spacing of 850-900mm between screens gives each pupil adequate working space.
- Once exposed, photographs are developed and fixed in the three tray developing unit, rinsed and then put in the drying cabinet.
- Finished prints can be placed in trays near the door, ready for collection.

2.23 Resources such as filters and lenses are kept in storage units under the 'dry' bench. Photographic paper can be stored in a drawer beneath each enlarger.[19] Chemicals are kept in lockable cupboards beneath the 'wet' bench. All cupboards are shown with sliding (rather than hinged) doors to minimise obstructions in a dimly lit space.

2.24 Dark room surfaces don't have to be completely painted black but it is usual to paint the wall behind the enlarger(s) black to prevent reflected light affecting the exposure process. Pin boarding is useful to display instruction sheets. Floors should be slip resistant and chemical resistant.

2.25 If the role of photography in a school's curriculum suggests larger groups, the plan shown in Figure 2/9 can be used as a basis with additional enlarger bays provided as necessary. If appropriately located, dark rooms are sometimes used for exposing screen printing film to UV light. In the plan shown here, a UV light box (see

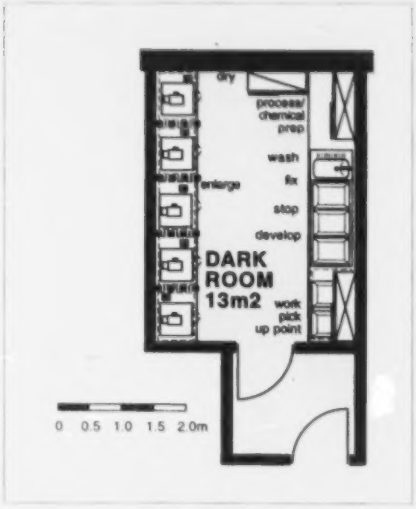


Figure 2/9
A dark room

'Equipment', Section 3,) could (depending on type and size) be positioned in a bay in place of the enlarger closest to the door, for easy access.

2.26 It is useful to have a clean working area adjacent to a darkroom where prints can be viewed and sorted. This may be part of the main art studio as long as there is no conflict between activities or, if provided and appropriately located, an art resource area.

Non-Teaching Areas

Storage

Items to be Stored

2.27 The range of items likely to be stored in an art department falls into three broad groups.

- **Pupils' work:** whilst in progress, pupils' artwork is usually kept in school where it can be reached easily. Once finished it may remain in school or be taken home (schools generally have a policy on this which should be ascertained). All pupils will probably have sketch books and a portfolio (A2 at KS3 and A1 at KS4) for their 2D work.[20] They will also produce articles which vary in size and shape from a printed textile to a large 3D construction. Records of pupils' work also need to be stored.

Notes

[19] Paper can be removed from its pack and even cut to size inside the drawer to avoid exposure. Alternatively paper can be kept separately and issued by the teacher.

[20] This is usually a simple plastic or card envelope, particularly for younger pupils.

Note

[21] The generic plans in Figures 2/5 to 2/7 show A1 size artwork (generally KS4) in portfolios in store rooms and A2 size work (KS3) in plan chests in the classroom.

- **Reference material and display items:** there will be books, slides and prints for pupils' reference and a range of two and three dimensional items which are used for inspirational display or as part of a still life set-up. Teachers will keep worksheets and text books.
- **Raw materials, tools and equipment:** materials required for pupils' work include paper, pencils and paint; fabric; wood sections; clay, glazes and plaster. There will be tools for claywork and printing. Equipment may include drawing boards, easels , an OHP, television with VCR and resources trolley.

2.28 Some of these items will be kept in the teaching space where they can be accessed easily. Some objects of interest, for example, are usually kept on classroom shelves where they form an inspirational display as well as being accessible for still life projects. A range of tools, materials and pupils' work in progress may also be kept in the studio; some pupils' work and reference material may be on display. This type of local storage is allowed for in the generic plans in Figures 2/5 to 2/7. Other storage places include the staff base (eg. pupils' records and reference material) and the resource area (eg. books and display items). For longer term storage of materials and display items, or for anything which needs to be kept securely, a lockable store room is usually provided. Equipment kept on a trolley such as an OHP or television may be parked here. Some completed artwork may also be kept in a store room.[21]

Size and type of store room

2.29 The area range recommended in Section 1 (0.4-0.5m² per workplace) includes space for circulation within the store room and is additional to the local storage under benches and on shelves in the teaching space. These figures represent an average across a department; the storage area associated with an individual studio may be outside this range. Storage requirements depend on a number of factors: room utilisation; the size of teaching groups; the range and scale of activities taking place and the school's policy on the long term storage of materials and pupils' work. Generally, an art room for three dimensional work will need more storage space than one where only two dimensional work is done. Storage area per workplace is likely to be higher where art is taught in small groups because every space needs a basic level of equipment which is unaffected by pupils numbers.

2.30 If the storage requirements of a studio are provided by two or three stores rather than one large one, a higher ratio of storage to room volume can be achieved. Providing more than one store room can also help in the organisation of different materials; in some cases there are health and safety reasons for separating storage.

2.31 If clay is used, a separate store room is usually provided for raw clay and tools. Raw clay is very heavy and if the art room is not on the ground floor it is likely that only small amounts will be brought up to the department at one time with large quantities being stored separately on the

Key

A = zone where access difficult unless door kept open

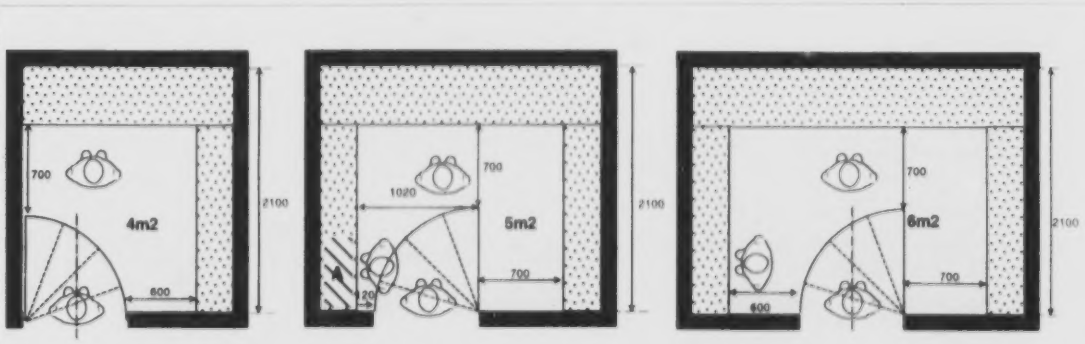


Figure 2/10
Accessing resources in 3 store rooms: 4m², 5m² and 6m²

ground floor. Clay must not become contaminated as this can cause work to be damaged during the firing process. It may not always be advisable, therefore, to store clay in the classroom as is shown in Figure 2/7. The kiln room can be used for storing clay artefacts awaiting firing but should not be used to store anything flammable. Plaster in powder form must be stored separately from clay and away from the kiln. Glazes for ceramics must be kept in sealed containers.[22]

2.32 Figure 2/10 shows three store rooms: 4m², 5m² and 6m². The dimensions given can be used as a guide to distances needed to access resources. In each case there is one wall of 500mm deep shelving for storing A2 paper, drawing boards laid horizontally, resources etc. General shelving for a range of smaller items is provided at 325mm (allowing for a standard tray, see 'Shelving', Section 3). In these examples, store doors open inwards which has the advantage of minimising obstruction in the studio itself but in shallower stores an outward opening door may be less restrictive. Certain points are worth considering about these plans.

- Sufficient space is allowed in front of the shelves to enable items to be retrieved comfortably and safely: a distance of 700mm for the deep shelves and 600mm for the shallower (increased to 700mm behind a door). In a store of less than 2.1m deep, this may be difficult to achieve.
- Space in the centre of the room can be used as a temporary parking space for a resource trolley or a mobile computer table.
- In the 4m² room, the door is positioned in the corner, restricting the shelving to two walls. The ratio of storage volume to room volume is consequently lowest in this room.
- The 5m² store room has the highest ratio of storage to room volume but at the expense of circulation/retrieval space.

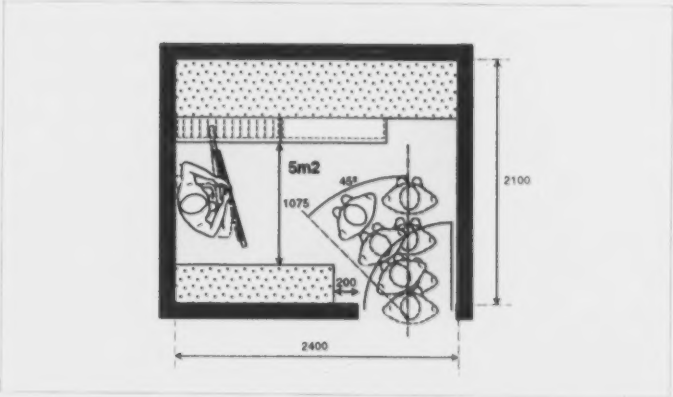


Figure 2/11
Portfolio storage

- The largest store does not provide a significantly greater volume of storage but there is more free circulation space to access shelving and parking space for equipment.

2.33 Figure 2/11 shows a 5m² store room accommodating A1 portfolios in a 700mm deep unit (see 'Portfolio Storage', Section 3). As additional depth is required to retrieve the portfolios, a minimum of 1000mm is allowed between shelves. The door is positioned in the corner to minimise obstruction. This room provides less overall storage than the 5m² store illustrated in Figure 2/10. Information on furniture for storage in teaching spaces and store rooms is given in 'Storage and Display', Section 3.

The Kiln Room

2.34 Because of the heat generated by a kiln, it is preferable to enclose it in a small room off the main space where access can be controlled.[23] A kiln room often doubles as a store for pieces of work awaiting firing. Adequate space must be allowed for opening the kiln door safely and there should be room to park a trolley when loading or unloading the kiln. There must be good ventilation and extraction from the kiln to the outside and there should be sufficient space around the back of the kiln to allow for air movement and access for servicing. Figure 2/7 shows the layout of a Kiln room adjacent to a 3D art room. Refer also to 'Equipment', Section 3; Section 4 and Appendix 2 (Figure A2/3).

Notes

[22] Refer to 'A Guide to Safe Practice in Art and Design', DfE 1995.

[23] If it has to be in the classroom, it needs to be surrounded by a cage and appropriately ventilated.

Section 3: Furniture and Equipment

The first part of this section covers various issues associated with choosing furniture for art and design, including questions of flexibility and ergonomics. The second part describes typical pieces of art equipment, providing guidance on their purchase and use.

Furniture

3.1 A suite of art rooms can become more unified and interchangeable if a limited range of furniture is used. This may be demonstrated by the example of changing a 2D art room to a more specialised textile printing room: the change-over is easily achieved if most of the furniture is common to both spaces.

3.2 The furniture in an art space should be able to accommodate the variety of activities taking place there. Pupils may sit or stand, they will work on vertical and horizontal surfaces and at different scales. Furniture can also play an important part in creating a stimulating environment and it should be treated as a resource. A mobile underbench cupboard, for example, may be used as a surface on which to display 3D objects or as a space divider, as well as for storage.

3.3 It is strongly recommended that furniture items conform to the strength and stability tests of BS 4875[1] and 5873.[2] This generally ensures that furniture meets the strength and stability requirements of an average school environment. The publication 'Educational Furniture Database' explains the background to the British Standards for school furniture.[3]

Tables & Benching

Perimeter Benching

3.4 In an art room, perimeter benching is used for preparing materials, cleaning tools and displaying objects. It can also be used as a worksurface. Benching may be at sitting height, but standing height is more usual in an art room. The recommended height for sitting is 700mm. A standing height of 850mm is generally suitable but taller pupils will find it easier to reach the bottom of a deep sink if benching is 900mm high. Benching in a dark room should be no more than 850mm high to suit viewing positions when using an enlarger.

3.5 The recommended depth of side benching is usually 600mm but a deeper bench (700-750mm) will be needed where A1 plan chests are housed beneath (see paragraph 3.29). In a dark room, a depth of 650-700mm is preferable to allow for some working space in front of the enlarger. It is more comfortable to sit at a bench if there are gaps or 'knee holes' between storage units, although a 700-750mm bench will allow some knee room in front of a standard unit (see also paragraph 3.24). If benching is cantilevered from the wall, front legs won't be necessary; there will be greater freedom for positioning mobile storage units and creating sitting places. The construction of benching should generally provide a firm working surface but sturdiness is particularly important in a dark room (to avoid vibration) and where clay is prepared (see paragraph 2.18).

3.6 Standard laminates or veneers over a manufactured board core are generally used for benchtop surfaces in art spaces; the laminate must be washable and water resistant. Heat resistance is required for certain activities but may be desirable generally, for flexibility. In a dark room, 'wet' benches should be of a chemical resistant material such as solid laminate (which may also be used in the studio). Solid wood or – more likely today – small sections of hardwood laminated together is another option for studio benching.[4] A wooden surface must be correctly sealed and maintained to prevent water reaching the wood itself. It has the advantage that it can be sanded and re sealed if damaged. The edge of a work surface may be part of the core (eg. sealed MDF with a laminate or veneered top surface) but where an edge (eg. laminate, PVC strip, MDF or solid wood) is applied, it must be well bonded and strong enough for its purpose. MDF or solid wood edges must have been treated with a sealant to

Notes

[1] 'BS 4875: Strength & Stability of Furniture', BSI 1985.
[2] 'BS 5873: Educational Furniture', BSI 1980.
[3] 'Educational Furniture Database' (Broadsheet 31), DfE, 1994.
[4] These small sections come from young trees which helps the development of a sustainable resource.

protect them from damage, particularly from water. Laminated surfaces with a post-formed edge may not be robust enough for an art room as the laminate can be thin where it forms the curved edge.

3.7 The detail at the back of benching must be carefully considered (particularly around sinks) to prevent water getting below the benching and possibly into storage units. An upstand is usually recommended, preferably one which is continuous with the worktop because water can eventually penetrate at the joint between two glued surfaces. The height of the upstand should be co-ordinated with the position of socket outlets and, where relevant, window sills. The way in which a sink is set into benching must also be carefully considered to minimise damage from splashing water (see paragraph 3.49).

Basic Tables

3.8 The tables in an art room need to cater for a variety of activities. Section 2 describes some of the ways in which they can be used: clusters of three or four tables for individual or group work; arranged into a horseshoe for a whole class still-life project; cleared away completely for informal discussion groups or to allow for floor based activities such as large scale sculpting. While they should be sufficiently lightweight to allow them to be reorganised easily, priority must be given to sturdiness to allow heavy duty work (such as with clay) to take place.

3.9 The recommended size for a table is 1.5 x 0.75m; this allows two pupils to work on drawings of up to A2 size (with or without a drawing board). Alternatively, a group of four pupils can gather around the table for discussion or evaluation activities. A sheet of hardboard can be laid across two tables to provide a continuous surface for large scale collaborative projects. Tables are available in larger sizes but this makes them more difficult to move which can be a disadvantage in an art room where a variety of activities may take place. One or two larger tables (eg. 1.8 x 0.9m) may be useful as a teaching focus.

3.10 The recommended height of a table is the same as for benching. A standing height table allows a pupil the freedom to walk around and away from a 3D object to view it while working. For delicate work such as decorating a clay pot, where the object needs to be as close as possible to eye level, pupils can sit on stools. A standing height table is also suitable for doing large scale 2D work for which pupils usually stand. A sitting height table may be preferable for smaller scale drawing activities (where pupils often sit for a considerable length of time) because resting one's feet flat on the floor allows for a wider variety of postural changes than putting them on the footrest of a stool. Sitting height tables are preferable for sewing machine work, where the foot pedal has to be controlled, and for fabric cutting. In the layout examples in Section 2, standing height tables are shown in the 2D and 3D art spaces but sitting height tables are shown in the textiles room.

3.11 Table tops are generally made from plastic laminate or a wood veneer over a manufactured board core. As tables will be rearranged frequently in an art studio and often butted together for large scale work, a firmly applied edge is important to avoid damage. A moulded plastic edging strip or a solid hardwood/MDF piece is advisable. As tables in art rooms will be wiped down regularly, a non-porous surface is essential. This is particularly important in clay areas where surfaces are frequently washed down to prevent dust from rising. Surfaces should provide a neutral background to colour work and be restful to the eye.

3.12 Figure 3/1 (overleaf) shows typical table frame types, the most common being the four-legged frame in wood or metal. It is usually the most sturdy, particularly when made of solid wood, which is important where clay or other 3D work is carried out. Metal frames often have adjustable feet attachments which can be useful where floors are uneven. A school may also wish to

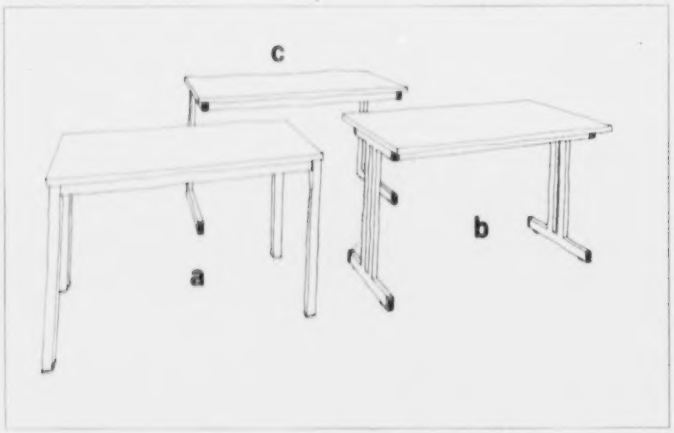


Figure 3/1
Table frames
a. four legged frame
b. 'I' frame
c. 'C' frame

consider an 'I' frame table (Figure 3/1b) or a cantilever (or 'C' frame) table (Figure 3/1c) which, when arranged in a long line, allow pupils to sit at any point along one side of the run without the restrictions of two front legs. A 'C' or 'I' frame does have the disadvantage, however, that the bottom rail of the frame can get in the way when sitting at the end of the table. A cantilever frame is usually constructed in metal and if not sufficiently robust may have too much flex. Some tables have a low level rail which can be used as a footrest, useful when pupils are resting drawing boards on their knees.

3.13 When choosing tables, as with all furniture, schools should explore fully the school furniture market and assess their needs as part of their budgetary considerations. Some schools may wish to use heavy duty science laboratory tables which can often be a cheaper alternative to the traditional 'craft' table. A standard laboratory table is generally 1.2 x 0.6 x 0.85m high (standing height) but other sizes and heights may be available. These tables have the advantage that they are readily available in solid timber or laminated timber sections (see paragraph 3.6). They can be sanded and re-polished should they become damaged and if properly sealed and maintained, the surface is resistant to water penetration. The hardwood most commonly chosen for a science room (iroko) may not be appropriate in an art room, where light reflectance is important, but lighter woods are available.

Note

[5] The number of tables that can be linked in this way is limited, see 'BS 6396: Specification for Electrical Systems in Office Furniture and Screens', BSI 1995.

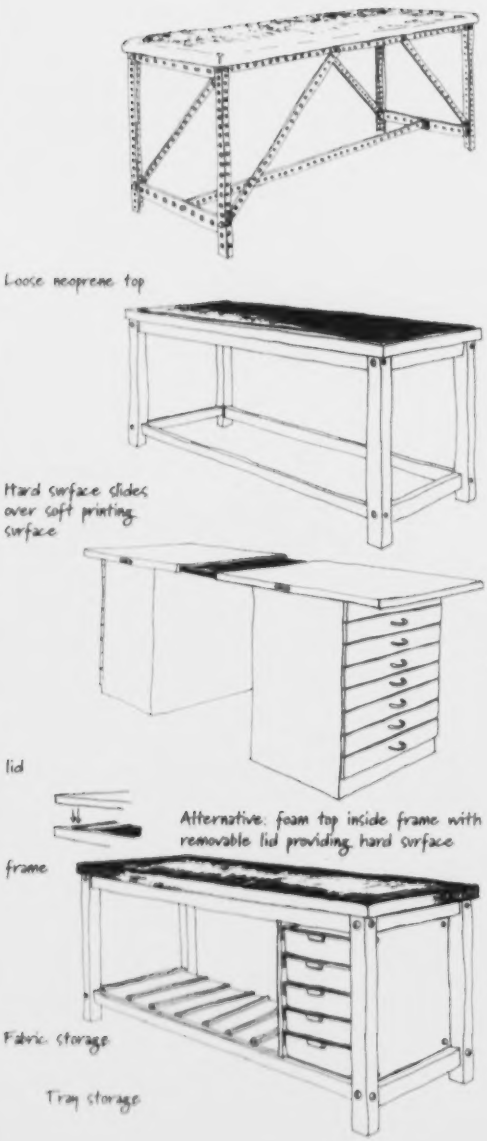
Computer Tables

3.14 A computer table should ideally incorporate a wire management system such as a cable tray running along the back, to prevent trailing leads and cables which may otherwise form a hazard. The tray also allows cables from one table to pass through another to reach a wall mounted socket outlet which increases the choice of table arrangements. A more sophisticated table has trunking along the back into which computer equipment can be plugged. This allows tables to be 'daisy chained' - one table plugged into another - which may be useful in places where there are groups of computers.[5] A computer table with castors (a trolley) may be useful where computers are shared between a number of spaces in an art suite. It is important that the castors are lockable to ensure stability.

3.15 Computer tables usually come in 1, 1.2 or 1.8m lengths. A useful rule of thumb is to allow 1-1.2m for a single station with one user, 1.5m for a single station with two users and 1.8m for two stations with two users. A table of 1.5 or 1.8m can also be useful when one pupil at a single station needs to have a variety of reference material alongside, although a basic table alongside a small (1-1.2m) computer table can serve the same purpose. A trolley of 1-1.2m is often more manageable to wheel from room to room.

3.16 A computer table should be deep enough to allow the keyboard to be placed in front of the VDU and for pupils to sit at least 600mm away from the screen; a depth of 750mm is usually sufficient. The overall area should allow for the flexible arrangement of IT equipment. Tables which are for use with computers should have a low reflectance finish to prevent problems with glare.

3.17 The height of a computer table should allow a pupil's eyeline to be level with the top of the screen; adjustable chairs may be used (see paragraph 3.21). Assuming a working height of 0.7m, the work surface and front rails should have a total thickness of no more than 75mm to enable thigh clearance and postural changes.



Steel framed 'industrial' type

Advantages
- Available in large sizes
- Can be dismantled
- Strong
- Not too difficult to move
- Relatively inexpensive
- Available with adjustable feet to ensure a level working surface

Disadvantages
- Limited possibilities for storage beneath.
- Cannot be used as general work surface (no hard cover)
- Industrial appearance may not be considered aesthetically pleasing

Timber framed with removable top

Advantages
- Heavy duty
- Strong
- Space beneath for storage
- Removable printing surface provides flexibility

Disadvantages
- Very heavy to move
- Need space to store neoprene top when not in use

Printing surface with removable cover mounted on plan chests

Advantages
- Dual function – storage and work surface
- Can be used as printing table or general work surface

Disadvantages
- Very heavy to move
- Need space to store hard covers when not in use
- Restricted access to drawers when table in use

Purpose-made timber framed table with storage below

Advantages
- Heavy duty
- Available with removable hard surface for general working
- Storage beneath

Disadvantages
- Heavy to move.
- Relatively expensive
- Limited range of sizes available
- Storage may not be efficiently used

Figure 3/2
Screen printing tables

Screen Printing Tables

3.18 In the screen printing process, various methods are used to block out areas of a mesh screen, creating a negative image of the desired pattern. Fabric or paper is taped to a table, the framed mesh is placed over the fabric and dye pushed through the mesh onto the fabric using a squeegee (see Glossary).

3.19 A table for printing onto fabric should have a sturdy frame and always incorporate a soft, securely positioned, top which gives a compliant surface on which the fabric sits. Printing tables are available in a variety of designs, some of which are illustrated in Figure 3/2; some of the advantages and disadvantages of each are noted on the drawings. A height

BEST COPY AVAILABLE

Notes

[6] Long printing surfaces can be created by putting several tables together as long as the top surface is continuous.
[7] Chairs should meet BS 5873 part 5 (test level 5) for strength and part 6 for stability.
[8] Some schools use fresh food as part of still life displays. This may need to be stored in a fridge somewhere in the school.

of 800-850mm is recommended to take into account the two dimensional nature of the work and the downward forces required in printing. Printing tables can be large (up to 3m long) and take up a considerable amount of floor area.[6] In multi-disciplinary art rooms, therefore, it may be useful to choose a table which can also provide a general work surface.

Wedging Bench

3.20 Wedging describes the process of cutting and banging down a lump of clay to rid it of any air pockets prior to modelling. The process requires an extremely sturdy surface such as a heavy wooden table or a slab of concrete. As the action involves a considerable downward force, the table should be around 600mm high. Raw or pugged clay is, however, often sufficiently workable to negate the need for wedging and some light kneading by each pupil on a sturdy art table is all that is required.

Seating

3.21 For general activities stackable moulded plastic chairs are useful as they are inexpensive, easy to clean and lightweight.[7] These chairs are available with a separate seat and back or formed as a single moulded piece. Single-moulding chairs which provide some flex in the back are generally the most comfortable. Fully adjustable chairs are preferable when sitting at a computer because they enable adequate postural clearance for pupils of varying sizes and allow pupils to adjust their eyeline to the correct position in relation to the computer screen. If used in conjunction with a mobile computer table, adjustable chairs should have castors to enable them to be moved from room to room with the trolley.

3.22 Where standing height benching or tables are used, stools can be provided. In an art room with sitting height tables and standing height benching, the use of stools at tables should be avoided. Stools are more comfortable if they have a shaped wooden or moulded plastic seat and they must have a footrest. A backrest may also be an advantage when, for example, pupils work with drawing boards resting on their laps. The disadvantage of a backrest, however, is that stools cannot be stored away underneath tables when not required.

Storage and Display

3.23 Section 2 divides the range of items to be stored into:

- pupils' work;
- reference material and display items[8];
- raw materials, tools and equipment.

Figure 3/3 summarises how these items may be stored and some of the most useful pieces of storage furniture are described in the following paragraphs. Some suggestions for using storage units to make the best use of available space are illustrated in Figures

Figure 3/3
Ways of storing a range of items

Items to be stored	Example	Possible Storage Places: Plan chest	Tray unit	Filing cabinet	Shelves (various depths)	Display board	Floor standing bin	Wall mounted bin	Crate
Pupils work	2D	•	•		•	•			
	3D		•		•				•
Reference material and display	prints	•			•	•	•(rolls)		•(rolls)
	worksheets		•	•	•				
	slides			•	•				
	3D objects		•		•			•	•
	books				•				
Raw materials/tools/equipment	paper	•	•		•		•(rolls)		•(rolls)
	pens		•					•	
	clay						•		
	3D 'scraps'		•					•	•

BEST COPY AVAILABLE

3/6 and 3/7. In many cases storage overlaps with display, for example where still life objects are kept on open shelves in the studio. Display is an important part of an art department and both horizontal and vertical display provide visual stimulation and information.

Floor standing storage units

3.24 These units are a useful method of storage as they can be housed under benching without any space implications; they can be either mobile (on castors) or permanently housed beneath a worktop. Mobile units are useful for occasions when pupils need to sit at a 600mm deep side bench as they can be temporarily moved elsewhere. They can also be used as space dividers between groups of tables, especially if they are at standing height. A mobile storage unit is a little more expensive than a fixed underbench unit because it has castors and a top but savings can be made in the cost of fixing. The advantages of flexibility in classroom layout should be considered alongside other issues within the constraints of the F&E budget.

3.25 Storage units are available with either shelves or plastic trays and both types are available with or without doors. Adjustable shelves can be more flexible than trays for storing items of varying height but trays, which can be pulled out, are easier to access than shelves. Trays may be used to store A4 paper and card; small display items; consumable items such as pens and pupils' work of a small scale. A tray has the advantage that it can be transferred to another cupboard, taken to a table for pupils to access resources during a lesson or slotted into a compatible trolley and wheeled to other rooms or stores. This is an example of the flexible and unified approach to furniture and resources described in the introduction to this section. Trays can be labelled and are available in a number of colours, making resources easy to code. Doors to underbench units must have sealed edges to prevent water ingress. They may be lockable if valuables are stored in a teaching room.

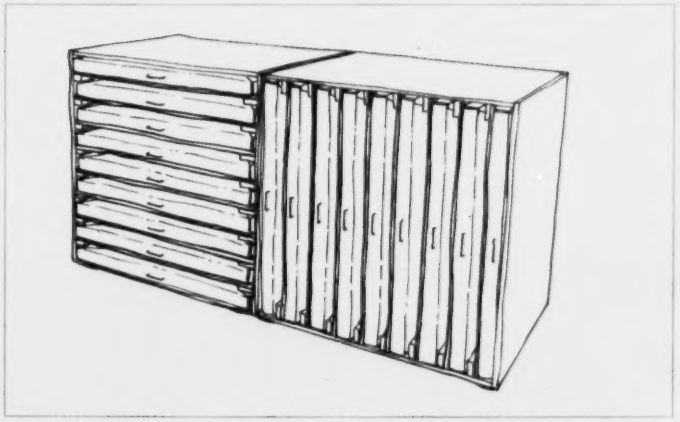


Figure 3/4
Portfolio storage

Damp Cupboards

3.26 In a room where ceramic work is done, there may be cupboards which are designed to keep clay work-in-progress in a moist condition. Damp cupboards are usually constructed of wood or metal with a plastic lining to retain moisture and can be below bench level or full height. Tall cupboards provide shelves at eye level but there may be more congestion if several pupils are collecting their work at one time. All cupboards must be located away from any heat source such as a radiator or the kiln. Adjustable shelving allows works of varying size to be stored. An alternative to a damp cupboard, particularly for larger pieces of work, is to wrap the item in plastic and keep it on a shelf or, if very large, on the floor.

Portfolio Storage

3.27 Portfolios vary from a simple flat card or plastic folder to a rigid portfolio with boxed sides; they can be stored in a number of ways. Figure 3/4 illustrates one system which comprises a purpose made A1-sized wooden unit with horizontal divisions. This can be used to store nine rigid portfolios (as shown here) or around 20-30 card or plastic folders. The unit is also shown in the store room plan in Figure 2/11. As it is a cube this unit can be rotated to provide vertical divisions for storing rigid portfolios or drawing boards. Other storage methods include laying portfolios flat on deep shelves

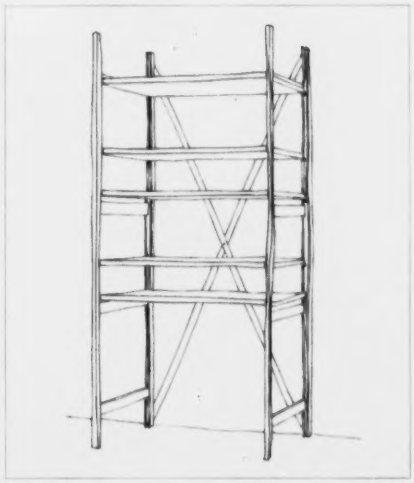


Figure 3/5a
Side support shelving

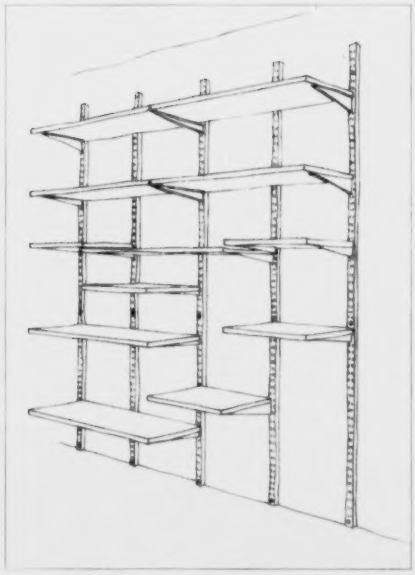


Figure 3/5b
Cantilevered brackets

or using a proprietary mobile rack which has a metal frame clad in laminated board. A two-level version of the latter can hold 60–80 portfolios.

Drawing Board Storage

3.28 Drawing boards can be stored vertically or horizontally. Storage methods include purpose-built or proprietary static under-bench units with vertical divisions; free-standing mobile rack units which can be wheeled under benching and deep shelves (more likely in a store room than a studio).

Plan Chests

3.29 Plan chests, which can be in the same range as the cupboard units, can be used for storing paper, card and pupils' work. They can be located under a bench (if depth allows) or free-standing, allowing the top surface to be used for still life arrangements and display generally. It must be remembered that as most plan chests are heavy, they cannot be moved around as easily as cupboard units and while they can provide useful space dividers, their position must be carefully considered. Good heavy duty lockable castors can be provided for them, however, if required.

3.30 A typical 1m wide (A1) plan chest beneath a standing height bench accommodates around eight drawers, depending on their depth. A free-standing plan chest is taller and has about ten drawers. Generally, shallow drawers are more useful because work can be accessed more easily and is less likely to be damaged. The number of drawers required will depend on the school's storage arrangements and policy for taking finished work home. A general art room may have one drawer for each KS3 group using the space, and two extra drawers for paper. KS4 pupils' work which is generally A1 and usually kept in portfolios on shelves or in racks would be additional to this.

Shelving

3.31 Shelving may be used for storage and display in the classroom or resource area where it will usually be above benching.[9] Full height shelving may be used in the studio but is most often used for bulk storage in a store room.

3.32 There are a number of shelving systems available for full height storage with varying levels of flexibility. Fixed shelving can be supported by wall battens (not suitable for long spans) or cantilevered brackets. Adjustable shelving provides greater flexibility; two typical systems are described here.

Note

[9] On all the art room layouts in Section 2, shelving is shown above a fixed worktop. It is inadvisable to provide shelving above unfixed furniture which may be moved away, as it can then become a hazard, often being at head height.

3.33 **Side supported shelving (Figure 3/5a).** A free standing timber system where re-locatable lugs allow shelves to be adjusted vertically. The maximum distance between uprights is usually around 1200mm. Some advantages of this system are that it is:

- easy to install;
- relocatable;
- rigid.

Some disadvantages are:

- the shelf width (span) is determined by the vertical supports;
- side panels can make it more difficult to access certain resources.

3.34 **Cantilevered brackets (Figure 3/5b).** This is a versatile system providing both horizontal and vertical variability. It is important that the supporting wall is strong enough to take the load. The maximum centres for uprights is usually 700mm to allow a reasonable span for a typical 19mm thick shelf. The system is also shown in Figures 3/6 and 3/7a. The advantages are:

- it has flexibility;
- shelf widths are not standardised;
- an uninterrupted (and long if required) run of shelving can be achieved making access easier.

The disadvantages are:

- shelf depth is limited by the strength of the cantilevered support (generally 700mm max);
- uprights have to be fixed to the wall, sometimes at frequent intervals.

3.35 Any of the wall mounted systems described above can be used to support shelves above studio benching. Alternatively a variation of the cantilevered bracket can be used; uprights are hung from any point along the length of a horizontal rail which is fixed to the wall at high level (rather like a picture rail). The latter is a very flexible system which can also be used to support white-boards and display boards (Figure 2/4).

3.36 A shelf depth of 250-350mm is appropriate for classroom display and general storage (325mm will accommodate a standard plastic tray); a depth of 500mm will be needed for A2 portfolios, folded fabric and paper. Drawing boards may also be stored on deep shelves (alternative methods are described in paragraph 3.28). Shelves in the kiln room should be metal (and all other F&E non-combustible) because this is a high fire risk area.

Bins, Crates & Trolleys

3.37 Large plastic bins are useful for collecting rubbish (a bin is shown alongside each sink in the art room plans in Section 2). They are available with wheels or can be moved around on a small trolley (or dolly), see paragraph 3.38. They can also be used for storing materials such as clay while soaking. Clay may also be stored in metal or plastic bunkers which have the advantage that they are shallower than bins and materials can be more easily reached. Smaller bins are useful for storing large art prints in cardboard tubes. Small plastic bins that hang from a wall-mounted grid can be used to store small items such as textile scraps or resource material for still life display. Crates (some of which are also available with castors) are particularly useful in the store room for storing 3D items for display, pupils' work and bulky materials for construction work (Figure 3/7a).

3.38 Resource materials are often kept on trolleys enabling them to be moved from a storeroom to an art room for easy pupil access. Trolleys often incorporate plastic trays which can be of the same range as those in the underbench cupboards, increasing flexibility. Dollies, which can have brakes, are useful for moving large pieces of sculpture or bins.

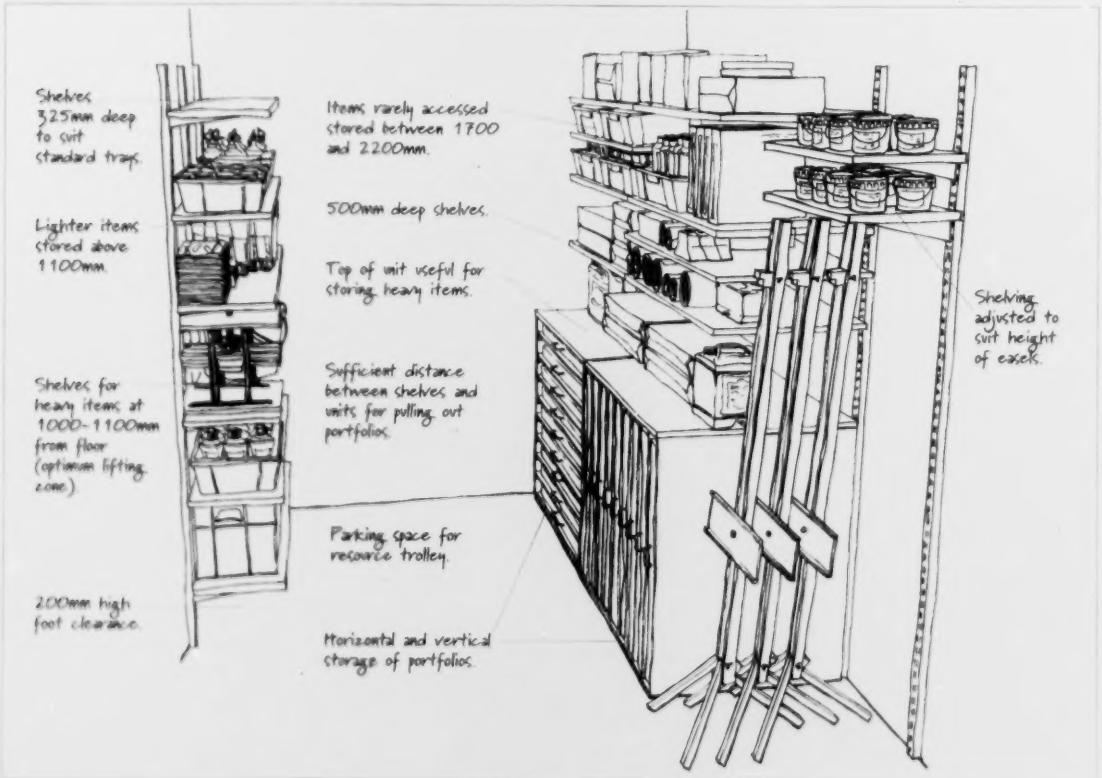
Optimising Store Room Space

3.39 Figures 3/6 and 3/7a show some of the ways in which the storage methods described in this section can be used to make the best use of an art room store. Figure 3/6 is based on a plan in Section 2 (Figure 2/11). Although the items shown are mainly associated with a 2D art studio, many of the principles apply to all store rooms.

3.40 The adjustable shelving system described in paragraph 3.34 is used in both cases. It can be seen how it allows shelves to be arranged to suit a particular need. In Figure 3/7a shelves are closely spaced where packs of paper are kept, to minimise damage. In Figure 3/6, several shelves are omitted to allow room for easels. The advantage of a non-standard shelf depth can be seen where 325mm shelving is used for general storage and 500mm shelving for larger items (located above the portfolio storage where small objects would be more difficult to reach). Most shelving systems of this type include a range of accessories that can be attached to the uprights in place of shelf brackets. Two examples are shown in Figure 3/7a: a metal panel from which standard bins can be hung (see paragraph 3.37) and pairs of brackets which support holders for rolls of paper or textiles. Other points of interest are given below and noted on the drawings.

- Mobile bins and crates of varying size are used to good effect for storing 3D display items, prints and rolls of paper.
- In Figure 3/7a a mobile unit with vertical divisions is used for storing A3 portfolios. Figure 3/7b shows the same unit slid beneath perimeter benching or moved into the centre of the room where it can be accessed easily by pupils. It can also provide a horizontal display surface.
- Both stores have sufficient floor space between shelves to park mobile equipment such as a trolley which can be used to carry trays of resource material into the studio (Figures 3/7 a&b).

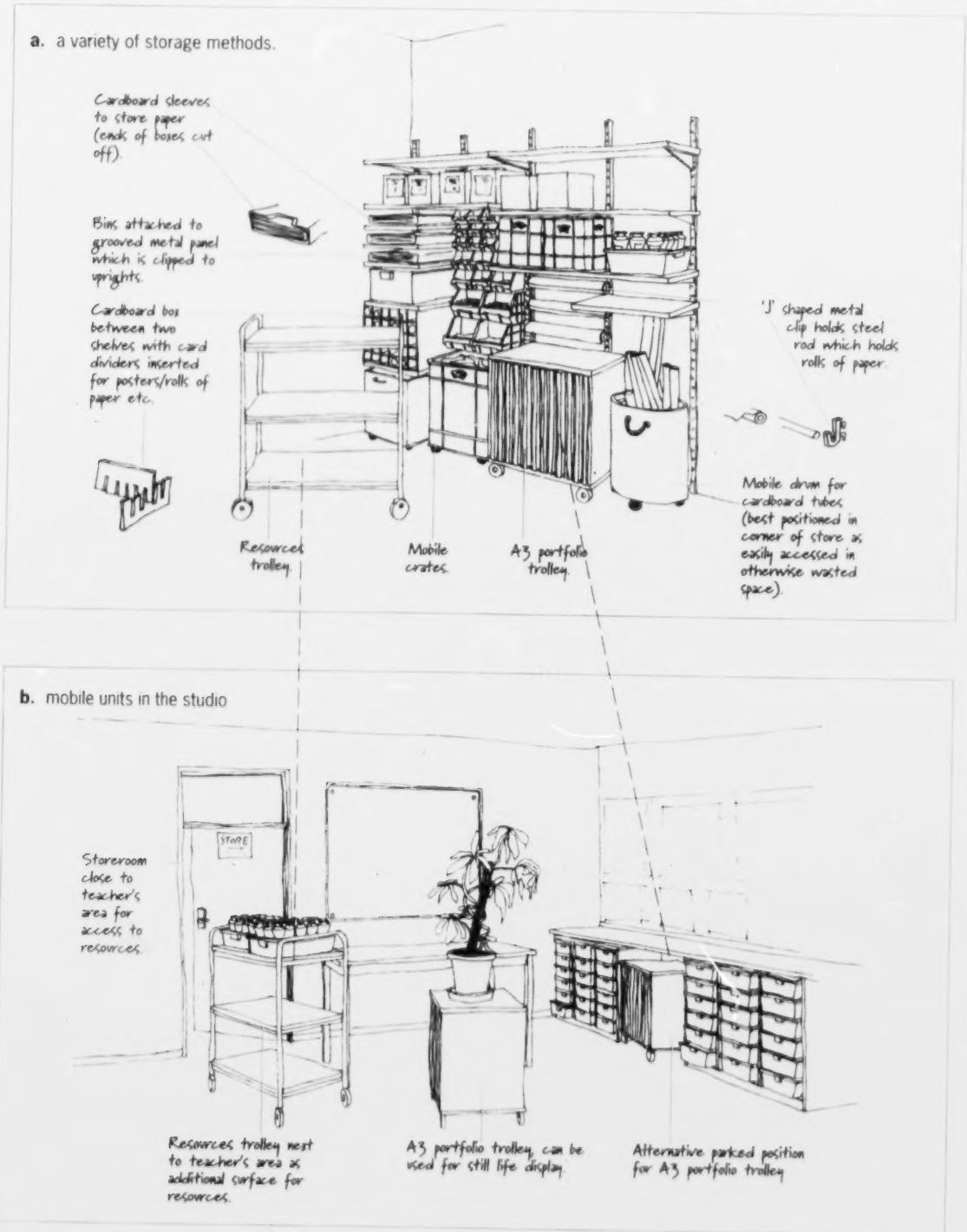
Figure 3/6
Optimising store room space


Shelves 325mm deep to suit standard trays.
Lighter items stored above 1100mm.
Shelves for heavy items at 1000-1100mm from floor (optimum lifting zone).
200mm high foot clearance.
Items rarely accessed stored between 1700 and 2200mm.
500mm deep shelves.
Top of unit useful for storing heavy items.
Sufficient distance between shelves and units for pulling out portfolios.
Parking space for resource trolley.
Horizontal and vertical storage of portfolios.
Shelving adjusted to suit height of easels.

BEST COPY AVAILABLE

- Teachers often devise excellent storage methods using inexpensive materials. A cardboard box with a grid of divisions is shown in Figure 3/7a, for example.

Figure 3/7 a&b


a. a variety of storage methods.
Cardboard sleeves to store paper (ends of boxes cut off).
Bins attached to grooved metal panel which is clipped to uprights.
Cardboard box between two shelves with card dividers inserted for posters/rolls of paper etc.
'J' shaped metal clip holds steel rod which holds rolls of paper.
Mobile drum for cardboard tubes (best positioned in corner of store as easily accessed in otherwise wasted space).
Resources trolley
Mobile crates
A3 portfolio trolley
b. mobile units in the studio
STORE
Storeroom close to teacher's area for access to resources.
Resources trolley next to teacher's area as additional surface for resources.
A3 portfolio trolley can be used for still life display.
Alternative parked position for A3 portfolio trolley

BEST COPY AVAILABLE

Screens

3.41 Furniture screens are often used for the vertical display of pupils' work around the school; several may be kept for GCSE/A-level end of year exhibitions. They may also be used in studio or resource areas and some schools use them to temporarily divide a space. Furniture screens come in various sizes and finishes with differing connection methods. Screening systems allow for a number of angled formations which have the advantage of fitting more snugly around furniture or structures. Care must be taken to choose screens that do not present a tripping hazard when located in the centre of a space. A height of 2.1m is recommended to allow the majority of art work to be viewed easily but if screens are used as space dividers, a height of 1.2m may be more suitable to facilitate supervision.

Equipment

Pug Mill

3.42 A pug mill, which should only be operated by a teacher or technician, reconstitutes old pieces of clay. Used clay is soaked in bins until saturated and left overnight to dry on plaster bats. It is then fed into the pug mill and extruded as coils (depending on the die plate used) ready for re-working. A pug mill can also be used for adding other materials to the clay such as grog and sand. There are models of various sizes, both vertically and horizontally mounted. It is generally felt that a pug mill can save both time and money; in most cases a small capacity model is adequate.

3.43 Pug mills should be guarded and sufficient space must be allowed to enable the pull-down lever (in the vertical pug mill this is mounted on the front of the machine) to be operated safely and without disruption to others. Refer to Appendix 2 for a dimension guide. The machine must be permanently bolted down to the floor or workbench.

Blunger/Mixer

3.44 An electric blunger or mixer will mix glazes and slips (liquid clay, poured into a plaster mould which leaves a thin layer the same shape as the mould) using two rotating blades. The slip or glaze is then run off through a nozzle into an electric vibrating sieve which screens the glaze or slip for impurities. A blunger (which is used mainly by teachers and technicians) should be sited on a suitably low surface to allow the tank to be filled easily from the top; it can be kept under the bench when not in use. These pieces of equipment are less often seen in schools now since pre-mixed glazes and slips are readily available.

Potter's Wheel

3.45 Floor mounted potters' wheels can be either electrically controlled or foot operated. It is quite usual for larger, more sophisticated, models to incorporate a seat. A pipe is attached to the side of the wheel for discharging water (used in the potting process and for cleaning), usually into a bucket. The position of a wheel should be carefully considered and a clear working area allocated so that the user can operate the wheel in safety without distraction. As wheel work can require a large amount of intensive instruction as well as taking up a lot of floor area, some schools prefer to use table-top mini-wheels (or turntables). These are rotated by hand and can be used for building a pot or turning a piece of pottery around (eg. for glazing). Turntables are less than 300mm in diameter and may be stored easily in cupboards.

Kiln

3.46 School kilns (which are generally only operated by a teacher or technician[10]) are fired by electricity and although they are available as top loaders,

Note
[10] Kiln loading by pupils must be closely supervised.

the front loading type is most often used. Kilns come in a variety of sizes and shapes; some of the smaller ones may be mobile. A large kiln can be used for the work of a whole class or for larger pieces while a small kiln is more energy efficient and can be fired more frequently because it fills up more quickly. Some schools have one kiln for biscuit firing and one for glaze firing. Although it may be considered ideal to have two kilns (one kiln of each size) this is often uneconomic, especially in a small department. In most schools, one large kiln (eg. 4.5-6 cu. ft) is usually provided. The size of a kiln must be carefully considered when assessing its siting and for a front loading kiln, space must be allowed to ensure the door can swing fully open. There should also be enough space at the back and sides to allow for ventilation and access for maintenance. Recommended distances are given in Appendix 2. See also 'The Kiln Room', Section 2, and Section 4.[11]

Sinks

3.47 Art room sinks can be made of clay or stainless steel. Large clay sinks, 1.0 x 0.6m, often known as 'Belfast', are particularly useful as they are hardwearing and do not stain. Stainless steel sinks are generally less expensive and can be provided in a wider variety of sizes. All sinks should incorporate two draining boards for draining paint pots, palettes, printed fabrics etc. Wooden draining boards which may be removable are generally provided with clay sinks. An easily removable trap (such as a clay trap or large bottle trap) will be needed where clay or plaster is used and is advisable in all art rooms where a number of materials used can cause a build up of silt. It should be possible to place a bucket under the taps.

3.48 In a textiles room there may well be three sinks, one of which will be dedicated to the washing of screen printing frames and sometimes printed fabrics. This can be an ordinary sink as long as it is deep enough to accommodate the printing frames; a simple domestic shower hose[12] on the tap should create sufficient pressure to wash the dye from the frame. Alternatively, specialist screen-washing sinks are available, usually in stainless steel; these have a high pressure nozzle, high splash-back panel and low front panel. There should be a draining area for screens alongside. Such a sink may also be used in a 2D art room if silk screen printing onto paper takes place. See also 'Ventilation', Section 4.

3.49 The location of sinks should be carefully considered to ensure the wall height behind the sink is sufficient for a splashback, particularly the high splashback associated with a screen washing sink. Where sinks are incorporated into a worktop, careful detailing is essential to ensure water cannot reach storage below. Stainless steel sinks are usually inset into benching but clay sinks are often free-standing with the draining boards overlapping the sink.

3.50 Photographic development sinks are made from a chemically resistant material and can either be a simple trough which holds the plastic trays of chemicals, with a separate print washing facility, or a purpose-made compartmented unit incorporating a washing sink. The latter has the advantage that chemicals are less likely to become mixed. This type also has separate drainage holes for each compartment allowing for constant running water over the rinsing sink without spoiling the chemicals. The trough can have a flat bottom which is better for keeping trays level or a sloping bottom which is better for draining. It can be set into a worktop or free-standing (supported by legs or cupboards).

Drying Racks

3.51 Paintings can be dried in a variety of ways. Works can be hung vertically from bench or wall mounted timber racks or hung on suspended ceiling racks which are lowered via a pulley.[13] Alternatively,

Notes

[11] See also 'Health and Safety in Ceramics' by the Institute of Ceramics.
[12] The hose arrangement should comply with Water Supply Byelaws Nos. 16&17.
[13] Consideration should be given to the installation and use of high level equipment to ensure safety.

paintings can be laid horizontally on one of a series of hinged metal grids which are connected to form racks of varying heights. These can be free standing (A1 size) or bench mounted (generally A2 size). Free standing A1 size racks offer the greatest flexibility.

3.52 Drying racks for other purposes may include:

- a ceiling mounted laundry airer with a pulley mechanism, useful for drying screen printed textiles;
- a rack above the screen washing sink for drip drying fabric after dyeing;
- a wall rack - for draining/storing palettes etc. - may be useful above a general sink.

Light Boxes

3.53 A light box is a simple piece of electrical equipment: a metal box with a translucent cover containing a lamp (usually fluorescent) transmits light through sheets of paper allowing an image to be traced. Light boxes may be used in the studio and resource areas. They are available in varying sizes and often stand on the side bench. A small light box (A3 or A2) has the advantage that it can be moved around easily but it can only be used by one pupil at a time. A larger version can stand on (or be incorporated into) the top of a plan chest and, if positioned to allow access, can be used by two or three pupils at a time (Figure 2/5, Section 2).

3.54 One method of creating a stencil for screen printing involves exposing an emulsion layer masked by artwork to ultra violet (UV) light. The areas of emulsion through which dye should pass are hardened and subsequently washed away. Light boxes containing UV lamps are available in a bench mounted version or as a floor standing cabinet. The latter will have a space implication. As exposure to UV light should be limited, these boxes are either used in a dark room or the unit itself (usually the floor standing type) is designed to prevent light leakage.

Drawing Boards and Easels

3.55 A table top drawing board can either be free-standing or incorporated into a table (when it includes a removable parallel motion). The former offers greater flexibility since it can be used on any table or bench. Drawing boards with tiltable stands are useful for graphics activities but a simple lightweight flat board which can rest on the table top and the pupil's lap may be more applicable to art work such as still life. Easels may also be used but as they take up a lot of space and require tables to be cleared away, they are often only used by KS4 or sixth form students. Desk top easels are available, offering some flexibility for painting.

Section 4: Services and Environmental Design

This section provides a guide to the key issues involved in the design and installation of services and the main standards for environmental design but it is not comprehensive. Reference should be made to the regulations and guidance mentioned in this section and listed in the Bibliography. 'A Guide to Safe Practice in Art and Design'[1] includes detailed guidance on the design and management of serviced equipment and environmental services in art departments.

Services

4.1 It is advisable to produce wall elevations of each art space showing the location of all building services and elements, fixed equipment, and furniture. Co-ordination in this way can help to make the best use of available surfaces which is particularly important in art where walls are used extensively for display and as vertical work surfaces.

Electricity

4.2 All electrical installations must comply with the IEE Wiring regulations BS 6761.[2] Any fixed equipment (kiln, pug mill, blunger, most bench mounted machines) should be permanently wired to the electrical distribution system. There should be an isolating switch on or within two metres of the equipment and a central switch should control all fixed equipment in the room. Pug mills and blungers (and any machines with moving parts such as a lathe) must have emergency switch disconnectors.[3]

4.3 An electric kiln must have some device to ensure it is switched off before the kiln door can be opened. There must also be a warning light beside the kiln and in the main teaching space to indicate firing.

4.4 In an art studio, socket outlets are generally provided on the wall above perimeter benching. It is important to keep electricity and water separate and care must be taken in positioning socket outlets in relation to sinks. The control for potters' wheels must be via a waterproof switch in a sealed unit. In a textiles studio additional outlets on walls without benching will be needed for sewing machines, irons and small pieces of equipment such as wax heating units. In a dark room a number of outlets will be needed for enlargers and drying cabinets.

4.5 If any electrical tools are used outside (eg. for sculpture projects) they should be supplied via a flexible cable and fitted with a residual current device (RCD).

Gas

4.6 Gas is occasionally used to supply a kiln although such a kiln can only be used by someone fully trained in its operation. The installation of a gas kiln has to comply with strict regulations. 'Guidance Notes on Gas Safety in Educational Establishments' is a useful guide for schools.[4] Local Authorities may have their own regulations concerning gas kilns.

4.7 If bottled gas is used great care must be taken in the storage and use of the bottles. The local fire prevention officer must be consulted. Refer to 'Storage and Use of Highly Flammable Liquids in Educational Establishments'[5] and BS 4163.

Compressed Air

4.8 Portable compressed air units may be used to supply air brushes for painting. It is essential that these are properly maintained according to the manufacturers recommendations. Refer to the 'Pressure Systems and Transportable Gas Containers Regulations'.[6]

Water

4.9 Each art room should have at least one sink which is supplied with hot and cold water. Hot water is needed for removing certain substances from utensils and for cleaning screen printing frames. Hot and cold water is needed in a dark room where the temperature of developing chemicals is important. A handwashing facility is important where substances such as glaze powder are used, which can irritate the skin. Where clay or any other material that leaves sediment is used, a large removable trap should be fitted and regularly cleared.[7]

Notes

[1] 'A guide to Safe Practice in Art and Design', DfE 1995.
[2] 'BS 7671: Requirements for electrical installations. IEE Wiring regulations', BSI 1992.
[3] See 'BS 4163: Code of practice for health and safety in workshops of schools and similar establishments', BSI 1984 and 'A Guide to Safe Practice in Art and Design'.
[4] 'Guidance Notes on Gas Safety in Educational Establishments', British Gas and DES 1989.
[5] 'Storage and Use of Highly Flammable Liquids in Educational Establishments', HSE 1986.
[6] 'Pressure Systems and Transportable Gas Containers Regulations', HSC 1990.
[7] It is preferable to provide all art room sinks with such a trap to allow a range of activities to take place.

Environmental Design

Lighting

Daylight

4.10 The quality of light is particularly important in an art room to enable pupils to distinguish fine detail and the subtlety of colours. Daylight is the preferred source since it is the most pleasing form of light to the human eye and it provides the most accurate colour rendering.

4.11 In order to make the most of available daylight, it should be considered early in the design stage (see Section 1). The amount of daylight reaching a room is affected by external obstructions and the quantity and location of the glazing. As the sky is brightest furthest from the horizon, high level windows and roof lights are often used in art rooms particularly at the back of a deep room to supplement daylight from side windows.

4.12 Once daylight has entered a space, the level of internal reflectance has a significant effect on the level of light. The average daylight factor (DF)[8] in a room can be reduced by up to 25% by using subdued surface colours such as unpainted brickwork walls and a dark floor covering rather than white paintwork and a light floor. As art room walls are likely to be well covered in display in a variety of colours, the reflectance of the wall may be difficult to control. The ceiling is thus the most significant surface since the floor is unlikely to be very light for practical reasons. Window reveals and glazing bars also reflect light and they should not be overlooked when deciding on surface finishes.

4.13 Consideration should be given to glare and solar gain particularly where there is a lot of glazing. The daylight seen through a window on a bright day may be uncomfortable when viewed directly and may make it difficult to see a drawing if working near a window. Brightness is relative and a window will appear brighter if the room itself is not well lit or if the window surround is dark. Colours and window detailing can reduce this effect, as can the level of electric lighting. Various forms of external or internal control devices such as overhangs or blinds can be used to reduce brightness. Blinds will also be useful to dim the room for showing slides or when there are reflections on a whiteboard or computer screen. Vertically and horizontally slatted blinds provide greater daylight control than roller blinds but they are more expensive and generally harder to maintain.[9] An overhang or blinds can also control direct sunlight though the former is more effective in controlling heat gain because it reflects heat before it enters the room.

4.14 In a 90m² art room with windows along one side wall and a ceiling height of 2.7m, an average daylight factor of 4.1% can be achieved with high reflectance values for walls and ceiling (80% and 75%). This is in the range recommended in BB87 (4-5%).[10] However, the daylight factor will vary greatly over the depth of the space. Figure 4/1 (a-d) illustrates the results of a daylight factor calculation on a 10m wide x 9m deep space where the ceiling height and surface reflectances are varied. Ceiling heights are 2.7m (a&b) and 3m (c&d); surface reflectances are typical for a room with white walls and ceiling (b&d) and a room with dark painted (or fairface brickwork) walls and dark ceiling (a&c). The following points are worth noting.

- A higher ceiling results in more glazing and a greater surface area for reflectance. Both factors affect the level of daylight on the working surface but the size of windows is the most significant. A higher ceiling also has the advantage that there is likely to be less display at high level and maximum surface reflectance can be achieved from white painted walls.
- Increasing wall reflectances from 20% to 80% and ceiling reflectances from 40% to 75% can increase the daylight factor from 0.7% to 2%, 6m from the window.

Notes

[8] See Glossary for definition of daylight factor.
[9] Aluminium blinds can contain heat in very sunny situations and radiate it into the room.
[10] BB87: 'Guidelines for Environmental Design in Schools', DfEE 1997.

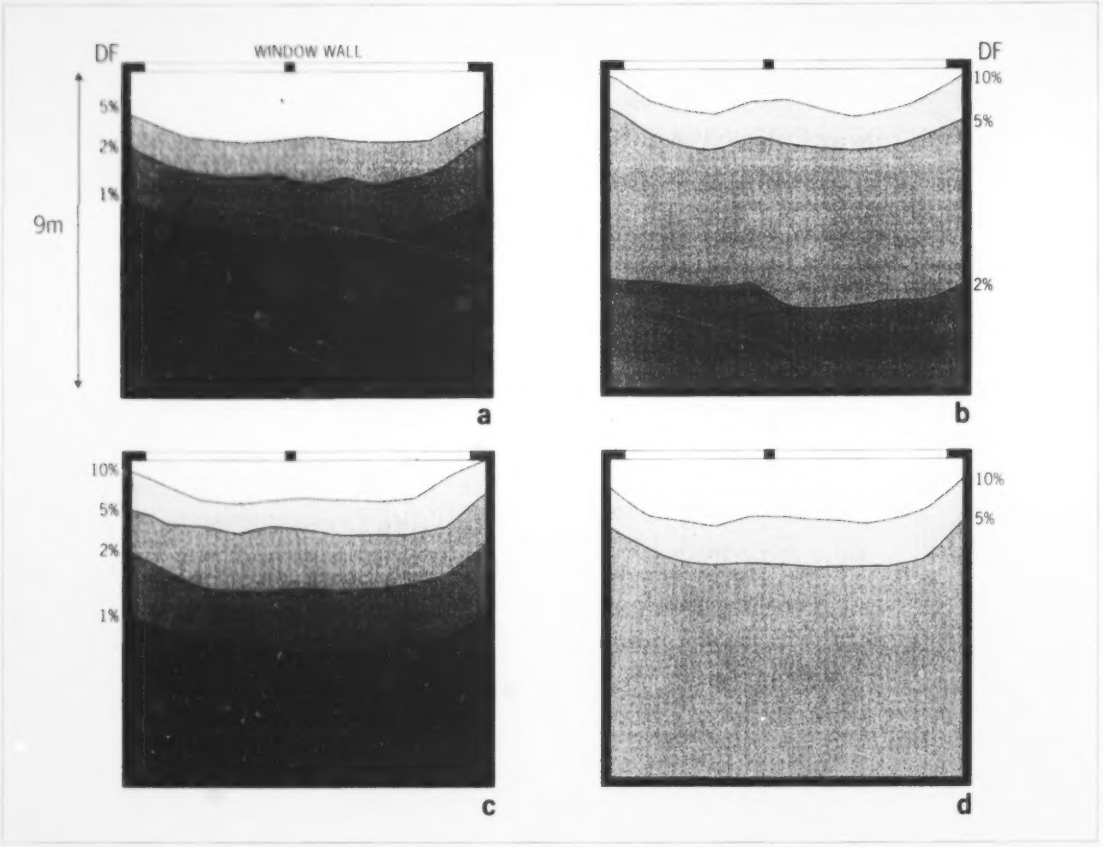


Figure 4/1 a-d
Daylight factors (DF) in an art studio with varying reflectance values[13] and ceiling heights.

a. 20%, 30%, 40% reflectance 2.7m high ceiling.

b. 80%, 30%, 75% reflectance 2.7m high ceiling.

c. 20%, 30%, 40% reflectance 3m high ceiling

d. 80%, 30%, 75% reflectance 3m high ceiling

- While there is a great deal of light near the window, this reduces fairly quickly so that in the back half of the room some DF readings fall below 2%. A daylight factor of less than 2% will not appear well daylit and electric lighting will be needed.[11] Alternatively, rooflights may be considered.
- Reflectance is particularly important away from the window where a high proportion of light is due to reflection.

Electric Light

4.15 Electric lighting fittings should be designed to achieve a good even spread of light without glare. The statutory requirement is for an illuminance level of 500 lux[12] on the working plane in areas such as art rooms where fine detail needs to be discerned. Lamps should have a high standard of colour rendering. Manufacturers categorise lamps according to colour rendering properties, 1A being the best. This can be provided by tungsten lamps or by specialist fluorescent lamps which are designed to simulate northlight. If non-specialist fluorescent lamps are used, a rating of 1B is preferable. Fluorescent lamps are initially more expensive but they are generally more economical to run than tungsten. Access to light fittings for maintenance purposes should be borne in mind particularly where ceilings are high.

4.16 Some form of directional lighting is desirable for displays. In permanent display areas spotlights on a ceiling mounted track are often used but for temporary displays, such as a still life arrangement, mobile fittings may be used. These may be floor standing or if screens are used, attached to the frame. The position and number of socket outlets in the studio may need to be considered. As with other mobile electrical equipment, care must be taken in positioning such fittings, to avoid trailing leads creating a tripping hazard. Alternatively an overhead trunking system may be considered.

Notes

[11] CIBSE Applications Manual: 'Window Design', CIBSE 1987.

[12] SI No. 360, 'The Education (School Premises) Regulations 1966',DfEE 1996.

[13] Reflectance values given for walls, floor, ceiling in each case.

4.17 In dark rooms, specialist 'safelights' will be needed for general illumination and local lighting over printing areas. Manufacturers provide detailed guidance. These lights can also be used in light lobbies.

Acoustics

4.18 Art spaces are often designed to be open plan and have higher ceilings than other teaching spaces. Many activities take place individually or in small groups but it is worth considering:

- the need to hear a teacher clearly during a whole class seminar ;
- the possibility of different activities taking place in adjacent spaces (eg. one group watching a film and another discussing a work of art).[14]

Ventilation and Heating

4.19 The requirements for heating and ventilation in school buildings are contained in the Schools Premises Regulations:

- any classroom should maintain a minimum temperature of 18°C;
- there should be controllable ventilation at a minimum rate of three litres of fresh air per second per workplace.

4.20 In an art room the heating should provide a comfortable working temperature, particularly as fine manual work such as drawing takes place. As daylight is important in an art studio, there may be a considerable amount of glazing and the possibility of solar gain and heat loss should be considered in the design of the heating and ventilation system. In addition, there are some specialised activities that take place in art which have particular ventilation requirements. These are outlined below but in each case further detail should be gained from the relevant regulations.

4.21 There needs to be mechanical extraction to remove heat from a separate kiln room. This may also be necessary if the kiln is sited in the teaching room if the general level of ventilation is not adequate. A dark room will also require mechanical extraction which must be designed to be light proof.

4.22 Certain activities in art, such as paint spraying, create noxious fumes. According to the COSHH Regulations,[15] it is the employer's responsibility to make an assessment of the potential hazard that could be caused by any substances likely to be used. The employer must then ensure that steps are taken to minimise the risk by proper use of the substance. It may be sufficient for a student to use an airbrush or aerosol near to an open window to ensure a good level of ventilation. However, if this type of activity takes place frequently or there are likely to be a number of pupils involved at the same time, some form of extraction system should be used. Water-backed spray booths are often used which filter fumes or extract them to the open air. Some of the substances used for cleaning screen printing frames should only be used in a well ventilated space. Chemicals used in the photographic process must be mixed in a well ventilated area, so an extractor hood is often provided over the dark room preparation bench.

4.23 It is important in areas where clay is used that the level of dust is minimised. The heating system should not circulate dust and all surfaces should be frequently washed down. If the room is enclosed, clay dust is less likely to spread to adjoining spaces. Wood dust must also be controlled and, if woodworking machines (pedestal or hand-held) are used in a 3D art room, there must be some form of local dust extraction.

Notes

[14] See 'Guidelines for Environmental Design in Schools' (BB87), DfEE 1997.
[15] SI No. 3246, 'The Control of Substances Hazardous to Health Regulations 1994'.

Section 5: Case Studies

This section describes four case studies. Two of these are design studies for adaptations and one is a proposal for a new art department in an existing school. At the end of the section, photographic examples illustrate some of the issues raised in earlier sections.

5.1 The case studies show how the guidance in the rest of the publication can be applied to real buildings where compromises (particularly in adaptation work) are often necessary. Priority is given to teaching area wherever space is limited. In each case the spaces are shown totally refurnished and re-equipped, following the strategy outlined in Section 2. In reality, unless the whole school is new, a proportion of existing furniture and equipment can generally be re-used.

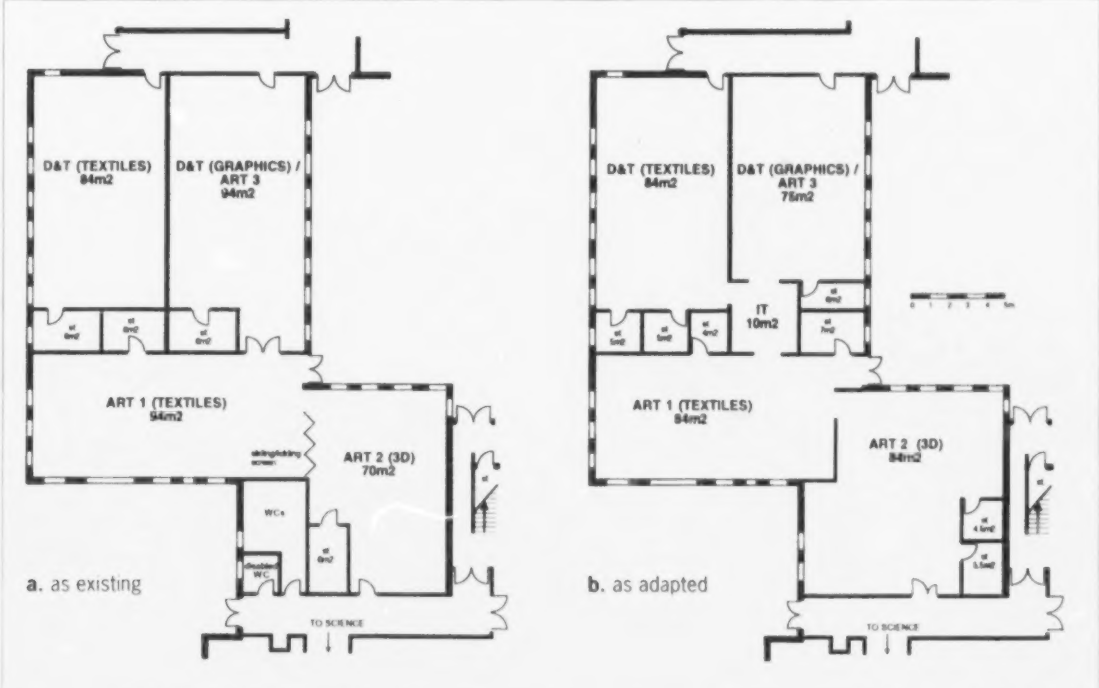
Case Study 1: A small department with D&T links

As Existing (Figure 5/1a)

5.2 Case Study 1 is an 11-16 school with 1200 pupils on roll. Art is taught in groups of up to 30 at KS3 and 24 at KS4. The number of teaching periods in art suggests 2½ spaces (two spaces would have 100% use). The spaces used solely by the art department are a general/textiles room and a room where three dimensional work takes place (ceramics is not taught as part of the art curriculum in this school). A small number of KS4 lessons take place in an adjacent graphics room which is shared with the design and technology department. This space is not satisfactorily furnished for art groups of 24 (group sizes in D&T are no more than 20 pupils). A D&T (textiles) room is also adjacent. The main characteristics of the current arrangements are:

- art 2 (3D art) is small at 70m² and poorly day lit;
- the overall storage area in the two art rooms is less than ideal (0.22m² per work place);
- there are direct links from Art 1 to D&T (graphics) but not to D&T (textiles);
- the graphics space, at 94m², has a significantly higher area per workplace than the other spaces in the faculty;
- the WCs adjacent to Art 2 are no longer required.

Figure 5/1 a&b
Case Study 1: as existing and as adapted



As Adapted (Figure 5/1b)

5.3 As the number of timetabled spaces is sufficient to meet the curriculum demand (taking into account the shared graphics area), this is unchanged. The existing semi-open-plan arrangement is also retained.[1] However, the two main teaching spaces are re-planned to provide two spaces of equal size and some space is taken from the graphics room to provide additional storage and a shared computer bay. This area is directly accessible from three spaces and provides a link between textiles facilities in D&T and Art. Security, access and supervision have been considered in its location. The graphics space is re-furnished and equipped to provide a more suitable shared space for up to 24 KS4 art students or around 20 D&T pupils. The WCs are removed, releasing 18m² and opening up Art 2 to another window wall. The overall storage area in the two main art rooms is increased from 0.22 to 0.35m² per work place.

Furniture Layout (Figure 5/2)

5.4 The main points of the layout are listed below.

- In Art 1 and Art 2, which are both smaller than the examples shown in Section 2, priority is given to table space and the run of side benching is reduced, but two sinks are still provided (a principle applied to other case studies).
- Art 1 provides for a range of 2D activities as well as textiles work such as screen printing, batik and machine work. As the space is smaller than the general art room in Section 2, the teacher's display table is omitted but the screen printing table is suitably located to allow it to be used instead, when covered. A computer table is also omitted but pupils can use the equipment in the IT resource area or the graphics room.
- Some form of sun control (such as curtains or blinds) is likely to be needed in Art 1 because of the extensive glazing.[2]
- A range of 3D activities can take place in Art 2 including construction with materials such as wire, card or plaster. The area furthest from Art 1 is designated for plaster work. Three sculpture stands can be brought to the centre of the space in place of three tables (shown dotted) or the floor may be cleared for large scale pieces.
- Two large (1.5 x 1.5m) plywood sheets are shown placed across a group of four tables in Art 2, creating a large unbroken surface for collaborative works such as a relief mural. These can be kept in one of the store rooms when not in use.
- The centrally located IT bay houses four machines and a printer. A windowless space such as this has the advantage that screen reflections and glare due to daylight are avoided (see 'Lighting', Section 4).
- The graphics/art studio is zoned into a clean, dry area and a wet area for cleaning and painting. The run of benching at the 'wet' end has one sink and an area for airbrush work which can be well ventilated (see 'Ventilation', Section 4). The clean zone contains IT equipment including a scanner, plotter and colour laser printer (the range will vary between schools). This facility is deliberately located adjacent to the IT resource area to allow equipment to be shared, if appropriate.
- There are two plan chests in graphics/art, one for D&T work and one for art pupils' work in progress. One incorporates a lightbox for tracing, positioned to allow pupils to work from two sides. The store room houses paper, disks and other resources and is supplemented by a tall cupboard in the studio.

Notes

[1] An open-plan arrangement can have advantages such as creating a greater sense of space but the transmission of sound needs to be considered see Section 4: Acoustics.
[2] Also useful to dim the lighting when showing slides.

Figure 5/2
Case Study 1:
The furniture layout

BEST COPY AVAILABLE

Note
[3] These spaces are shallower than those shown in Section 2. This allows greater daylight penetration from side windows, but the furniture layout may be more difficult to plan. See paragraph 2.6 for discussion of room proportion.

Case Study 2: A new art department

Background

5.5 Case Study 2 is an 11-18 school with 900 11-16 year olds and 200 sixth formers on roll. The school (a Technology College) is planning to expand to 1100 (11-16) places and additional area is required. Part of the development plan involves relocating the Art department into a new two storey building which has language rooms on the ground floor (Figure 5/3). The three existing art rooms are essentially multi-purpose but each has an emphasis towards a particular specialism: textiles, 3D and 2D. The school will continue this organisation once numbers increase but wishes to develop screen printing in the 2D part of the curriculum. Pupils will be taught in groups of up to 28 (KS3).

5.6 The scheme shown here is a design proposal for the new suite. There will be four timetabled spaces, three primarily for KS3 and KS4 use and a smaller sixth form room. As the average frequency of use of the four rooms is fairly low (60-65%), the sixth form studio can have untimetabled use and provide a base for the artist in residence. The rooms open off a top lit corridor which widens out to form an IT bay. Glazing between spaces allows views into and between teaching spaces, including the IT area.

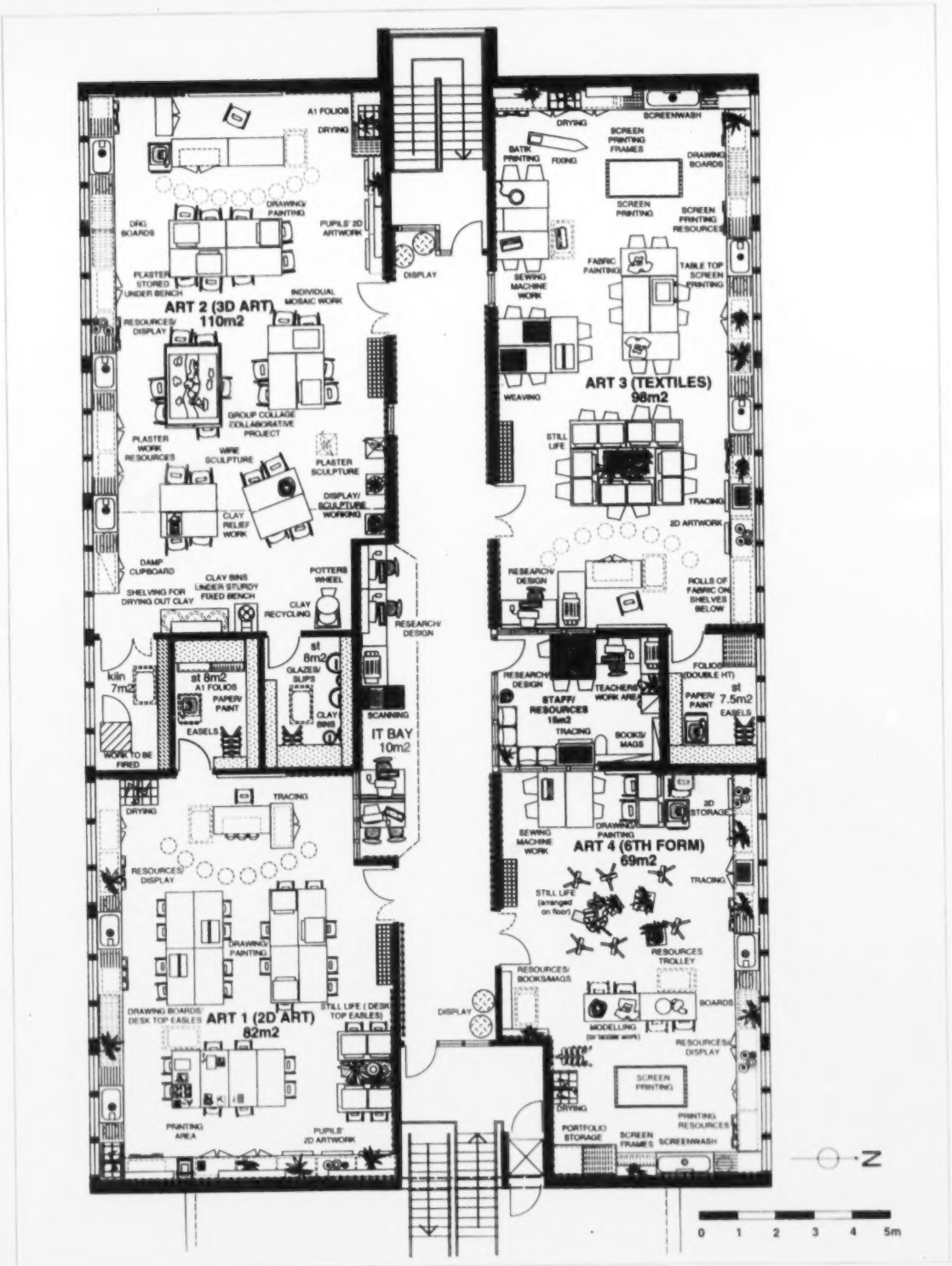
Furniture Layout (Figure 5/4)

5.7 The layouts for the three main art rooms are based on the generic plans described in Section 2,[3] although they are planned for groups of up to 28 students rather than 30. New furniture and equipment is shown for design purposes although in practice the school plans to re-use over 50% of its existing stock, reducing the overall cost of the project (see Section 6). Points to note about the layout of each space are listed below.

- Art 4 can accommodate up to 15 students doing a wide range of activities including painting, modelling and textile work. The printing table, positioned at one end of the space as it is less likely to be moved than smaller tables, has a removable top and can provide additional work surface if required. A longer version of the standard deep sink can be used for screen washing (with a hose attachment) as well as for general purposes.

Figure 5/3
Case Study 2: The new block

Figure 5/4
Case Study 2:
The furniture layout



BEST COPY AVAILABLE

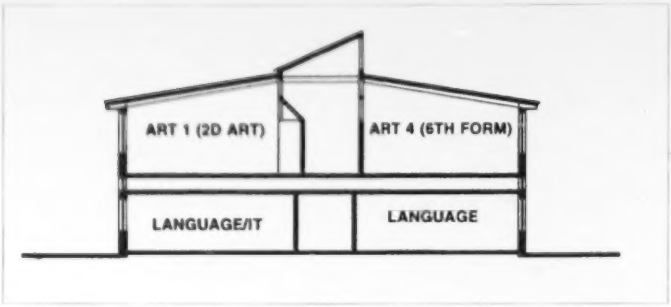


Figure 5/5
The new block (section)

- All storage for the sixth form is in the studio itself (including racking for around 20 portfolios).
- As more easel work is likely in the sixth form and students may use wall space for large scale 2D work, fewer tables are shown than in the main art rooms. Two tables are at sitting height for sewing machine work. A teacher's table is omitted but a white-board provides a 'teaching wall' for showing slides etc.
- A run of benching in Art 1 (2D Art) is designated as a printing area with a bench mounted printing press and storage for resources below.
- The staff resource base combines a teacher's work room with pupils' reference area. Sixth formers in particular may want to use this space for studying art books or looking at slides.
- The textiles studio is smaller than that shown in Section 2 and a smaller printing table is provided. However, a second printing table is available (by arrangement) in the sixth form studio.
- As there is a central IT area, fewer computers are shown in classrooms than in the Section 2 plans.
- Each of the three main studios has one large walk-in store with additional storage for fabrics in the textiles studio itself. Portfolios are kept in a double height unit (see paragraph 3.27, Section 3). The ratio of storage volume to floor area is a little lower than in the smaller stores in the generic plans which are more efficiently used. In a case such as this, careful organisation is needed to make the best possible use of the central floor area.

Environmental design

5.8 The first floor location of the art rooms provides an opportunity to have a continuous central rooflight bringing daylight to display areas in the corridor and (via high level glazing) to the back of classrooms (see Figure 5/5). The ceiling line of the studios follows the sloping roof increasing the sense of volume and giving a place for hanging displays.

5.9 A daylight level analysis (using a computer model) found the average daylight factor in all teaching rooms to be well over the recommended 4-5% (see Section 4). In the sixth form and textile studios it was 7.5% while in the 3D and 2D studios it was 8.5%. The difference is due to the additional central rooflight which allows light into the back of the south facing studios. The model showed that the rooflight made very little difference to the rooms on the north side of the corridor which are, in practice, lit by side windows only. Following the study, a revised section was considered – a symmetrical rooflight which would increase daylighting levels to north facing rooms. This option was rejected, however, since the advantage of the small increase in daylight levels did not sufficiently outweigh the disadvantage of having to deal with solar gain from south-facing glazing.

5.10 The study found that the minimum recommended daylight factor of 2% was achieved in all teaching spaces other than those areas furthest from the window (the last 1-2m), where supplementary electric lighting would be needed on some days. The daylight factor in the central corridor was near to the recommended average, at 3.8%. This is adequate in an area which is used for IT and circulation. As daylight comes from rooflights at high level, computer screen reflections are unlikely to be a problem. Display could benefit from some directional lighting.

Case Study 3: A medium sized department with a strong textiles bias

As existing (Figure 5/6a)

5.11 Case Study 3 is an 11-18 school with 800 11-16 year olds on roll and a sixth form of 100. Art is a very popular subject in the school with a high 'take-up' at KS4 and in the sixth form printed textile work is a particular strength. Classes are taught in groups of 30 in KS3 and up to 25 in KS4. The existing accommodation, which is on the ground floor, consists of three teaching spaces: one general art room, one for textiles work and one for 3D work including pottery. The centre of the deep plan is lit by rooflights. The design and technology department is adjacent and a direct link between 3D art and a multi-materials workshop allows occasional sharing of resources. The main characteristics are as follows.

- Art 1 and 2 are of an adequate size for the type of activities taking place (Figure 1/2, Section 1) but Art 3, at 78m² is a little small.
- An external door from Art 1 leads to a sheltered space for large scale or messy plaster work.
- Art 2 includes an area for washing and storing screens.
- Art 1 includes a separate pottery area, enclosed by glazed screens, which is intended for the preparation of clay and the use of potters' wheels. As clay plays a smaller part in the school's curriculum than it once did, the space is now little used.[4]
- The overall area for storage is good (0.43m² per work place) but there are no store rooms directly accessible from Art 3. There is additional storage in full height cupboards in Art 2 as well as a faculty office with an adjacent store where staff keep books, slides and worksheets. This room is also used for meetings and work preparation.
- The corridor access to Art 1 is narrow (1.2m) and there can be congestion particularly at the start of lessons.
- A locker area of 20m², opening off the corridor, is very little used because pupils prefer to take their belongings into lessons.

Note

[4] Teachers also find the separate space less convenient to supervise.

a. as existing

b. as adapted

Note: art room rooflights shown dotted

Figure 5/6 a&b
Case Study 3: as existing and as adapted

BEST COPY AVAILABLE

As Adapted (Figure 5/6b)

5.12 The number of timetabled spaces is unchanged but minor internal adaptations provide a series of spaces more suited to the school's current needs. The locker area is adapted to create a shared IT resource and display area which also provides supplementary workspace for Art 3. The corridor between Art 1 and Art 2 is widened to improve circulation. The link between Art 1 and the adjacent multi-materials room is retained to allow sharing of resources such as materials for construction. Other features of the adaptation are outlined below.

- The separate pottery area in Art 1 is removed, leaving a more flexible space. The existing rooflights ensure that the back of the room is adequately lit. A new partition reduces the likelihood of clay dust spreading to the textiles space.
- The existing store in Art 2 is removed to regularise the room shape. The planning advantages this provides offset the small reduction in storage area.
- The door into Art 3 is removed and the opening widened in order to improve physical and visual links with the adjacent area.
- The shape of the staff office is improved and a 6m² store room, accessible from the resource area, can be used by Art 3 pupils. A window provides a visual link between the office and resource area.

Furniture Layout (Figure 5/7)

5.13 The main features of the layout are listed below.

- In Art 1, an area for the preparation of clay and use of a potter's wheel is located at one end of the room, in an existing recess where it is defined but not entirely separated from the rest of the space (and thus more easily supervised).
- In Art 2, the function of the screen washing area is extended to become the main printing area. The loss of a circulation route to Art 1 makes the space more usable. As textiles printing is a particular interest in this school, two printing tables are shown (angled to ensure sufficient access to all sides). These are unlikely to be moved frequently and this location ensures that:
  a) the remainder of the space can be re-arranged to suit varying activities;
  b) pupils working on a print will not be disrupted by passing 'traffic'.[5]
- A low furniture screen and mobile tray units define the printing area. While this bay provides a useful area for printing and cleaning, it has the disadvantage that it cannot be integrated easily into the whole space if printing is not taking place (compare Figure 2/6, Section 2).
- The full-height store cupboards in Art 1 & 2 are retained, providing useful storage for items associated with the printing process (eg. dyes and screens) and clay work (eg. modelling tools and glazes). One of the cupboards in Art 1 is lined in plastic to provide a damp cupboard for work in progress.
- As Art 3 is smaller than the general art room shown in Section 2 (Figures 2/5 a&b), it has one teacher's table rather than two, and a reduced run of benching. One 1200 x 600mm table can be used for still life displays and to supplement the teaching table. A parking space for a computer is not shown but it is possible to use one of the computers in the resource area.
- The dark room is smaller than the example shown in Section 2 and a light lobby cannot be provided. There is sufficient space for one enlarger and a UV light box.
- The resource area houses three computers, a colour printer and a scanner. A trolley containing books and other resources can be wheeled from the staff base. Two tables provide a workspace for research work or for pupils to work outside Art 3 if required.

Note

[5] Sixth form pupils may work here while a lower school class uses the main part of the space.

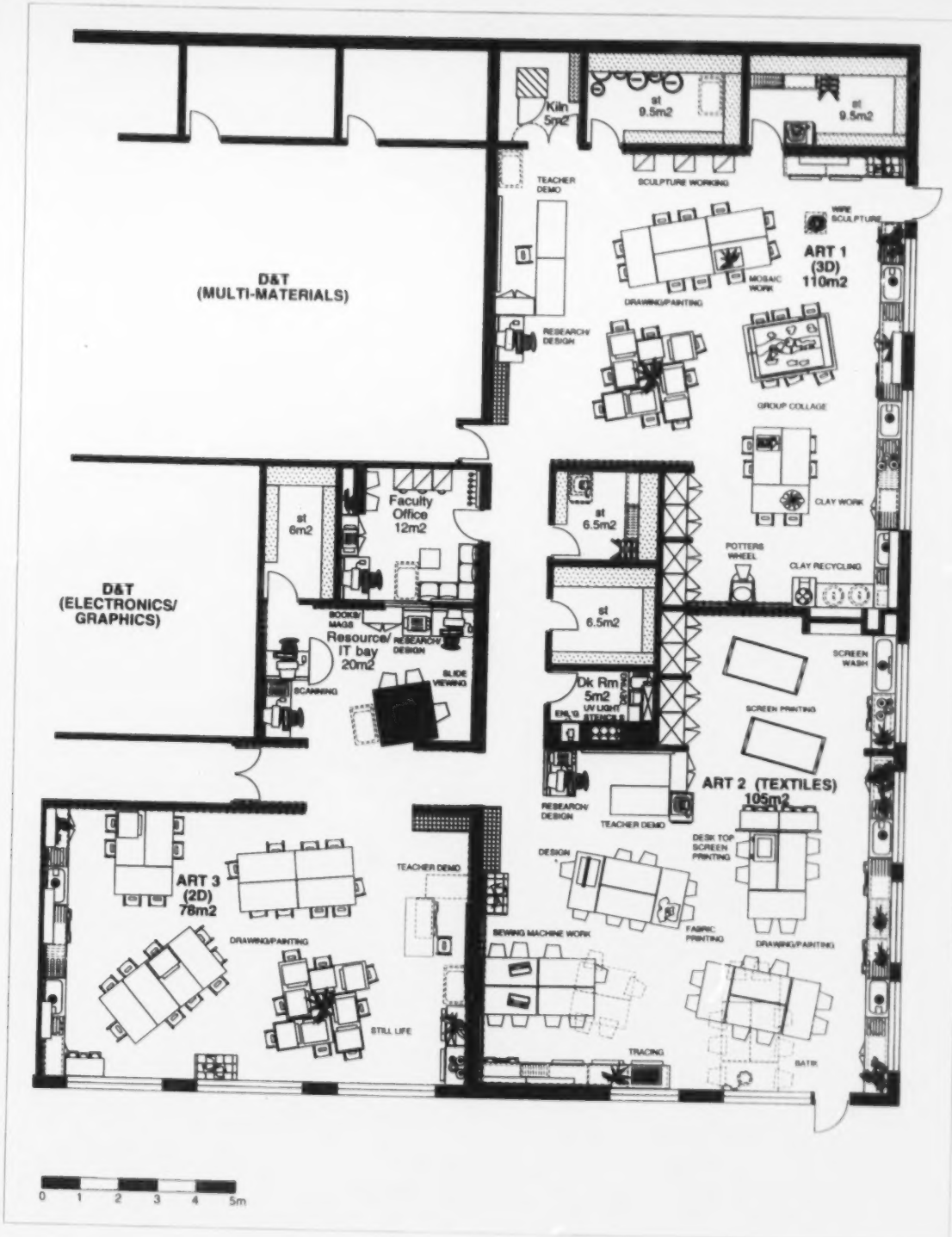


Figure 5/7
Case Study 3:
The furniture layout

BEST COPY AVAILABLE

Case Study 4: A middle school

Background

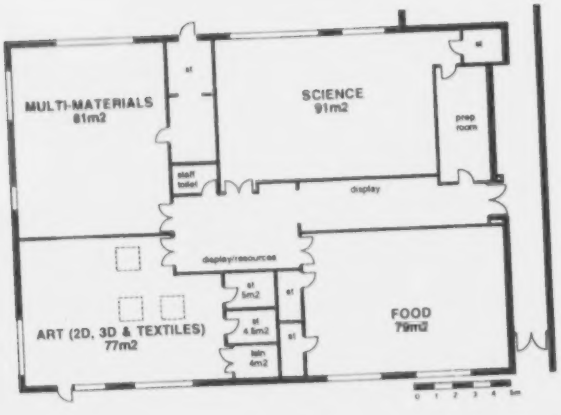
5.14 Case Study 4 is a 9-13 middle school with 300 pupils on roll. All practical lessons are taught in groups of up to 20 and the number of teaching periods in art at KS3 demands one space. The art room, which is well lit from windows on two sides, is located alongside other practical spaces: two design and technology rooms (multi-materials and food/textiles) and a science laboratory (see Figure 5/8). The spaces are less subject specific than they would be in a secondary school. The art room is used for some design and technology lessons and although principally timetabled for KS3, there is enough time available for KS2 pupils to spend some time in the space too. This is typical of middle schools where numbers on roll are usually small and only one year (if 8-12) or two years (9-13) are at KS3.

5.15 As there is only one art room, it has to accommodate a wide range of activities. The space is carefully managed so that incompatible activities do not take place simultaneously. There is easy access to the adjacent workshop and the food/textiles room, providing additional facilities if required (drills, sewing machines etc.). A shared resource area houses two computers and the wide access corridor provides ample display space for the suite.

Furniture Layout (Figure 5/9)

5.16 The arrangement is flexible to accommodate varying activities but the space is organised into two main zones: textiles facilities are at one end of the room and ceramics at the other. General 2D activities can take place anywhere in the space. Some useful points to note about the furniture layout are listed below.

- There are ten 1.5 x 0.75m standing height tables which can be re-arranged to suit different activities and an additional 1.8 x 0.9m table providing a teaching focus.
- There are two main runs of standing height benching; one run is primarily for 2D and textiles work, the other for 2D and 3D work. The 2D/textiles bench includes a drying rack over the sink (not shown) and space below for storing printing screens. A section of benching is kept clear as a supplementary work surface.
- A clay preparation area located away from the main area of activity is intended principally for the teacher's use. A damp cupboard for storing work in progress and bins for soaking clay are housed beneath a short run of benching. Clay can be dried out on shelves above. The area is partly screened from the rest of the room by an open shelf unit, used for storing unglazed work and displaying completed pottery objects.
- The storage area of 0.6m^2 per work place is useful in a space which provides for a wide range of activities and accommodates KS2 pupils as well as KS3. There are two store rooms: one contains specialist equipment and materials (including clay stored in bins) and the other houses pupils' work, paper and general materials. Shelving in the kiln room is used for work awaiting firing.
- Small scale screen printing can be done by individual pupils on any of the tables with the addition of a suitable soft surface. A removable top (with appropriate padding) placed across the teacher's table can be used to provide a larger printing surface.



Note: art room rooflights shown dotted

Figure 5/8
Case Study 4: The suite

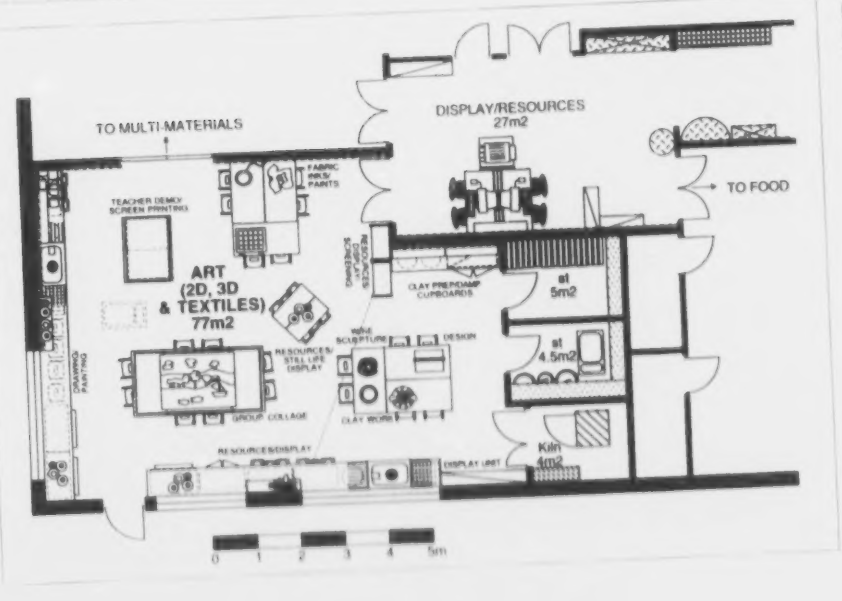


Figure 5/9
Case Study 4:
The furniture layout

BEST COPY AVAILABLE

Figure 5/10 – 2D and 3D display

Figure 5/11 – A hanging display

Figure 5/12 – **a:** before – an open passageway
b: after – a display corridor
c: view into a studio

Light and Display

5.17 The photographs on this page illustrate some of the issues discussed in previous sections, particularly the important part that display, volume and light can play in creating a stimulating environment for art and design. References are made to relevant parts of the document.

5.18 Display plays an important part in pupils' learning. Figure 5/10 shows how walls and side benching are used to store and display pupils' work and items kept as inspirational material and for still-life arrangements (see paragraphs 2.3, 2.8 and 2.27, Section 2). In the art studio in Figure 5/11 advantage has been taken of a high ceiling to create a hanging display of pupils' work (see paragraph 2.5, Section 2). This is a deep space; a continuous rooflight brings daylight into the centre while a large window provides views at one end of the room (refer to paragraph 4.11, Section 4). Surfaces are finished in white or very light colours for maximum reflectance.

5.19 Figure 5/12 (a&b) shows a passageway which has been glazed over linking existing art rooms and a new studio (converted from a disused cloakroom). The corridor provides an attractive display area which is well used (see paragraph 1.14, Section 1). Surfaces are light in colour and daylight is plentiful (see paragraph 4.12, Section 4). Views from the circulation area into the new studio (Figure 5/12 c) add interest (see paragraph 1.14, Section 1).

a

b

c

Section 6: Cost Guidance

This section provides general guidance on the cost of building specialist accommodation in secondary schools. It also includes a cost analysis of Case Study 3.

General Cost Matters

Building Consultants' Fees

6.1 New building work, including extensions and substantial adaptations to existing accommodation, will normally be designed, procured, and supervised by professional building consultants. Depending on the nature of the work, this service will usually cost between 10% and 15% of the value of the building contract. The fee will cover the cost of employing, where appropriate, architects, engineers and surveyors. There will be an additional cost if full planning approval is required. The respective professional institutions will supply details of the services that can be provided as well as information on fees.

6.2 The value of the building contract on which a fee is assessed will usually include fixed furniture and fittings eg. shelving, benching and cupboards. Care should be taken to ensure that fees are not paid on the value of items which, whilst forming part of the main building contract, have been independently designed, procured and fixed by a specialist contractor. This is because the cost of providing these services will have been included within the price for the work.

Value Added Tax

6.3 Under current regulations most school building work will attract VAT at the standard rate, although for LEA school building projects any VAT payable is recoverable by the local authority.

6.4 In the case of free-standing buildings and some types of extension projects at schools which have charitable status, the work is zero rated.[1] Adaptations to existing buildings, furniture and equipment and professional fees are standard rated whatever the type of project. DfEE grant aid will cover the additional burden of VAT (for the grant-aided portion of the work) where payable.

6.5 As VAT can have a considerable impact on the cost of a project, advice on its application should be sought from the local HM Customs and Excise Office at an early stage in the planning and design process.

Project Phasing

6.6 When it is necessary to consider phasing building work over a period of time, the additional costs associated with carrying out a number of small building projects instead of a single large one will need to be allowed for when the initial budget is set. Funding for phased educational projects is usually contingent upon each phase providing accommodation that will be fully operational in the event of further funds not becoming available.

New Building versus Adaptation/Refurbishment

6.7 Constructing and fitting out a completely new building for art and design can cost between £850 and £1150 per m^2 of gross floor area provided.[2] These costs include building work, furniture, equipment, site works and professional fees, but exclude abnormals, land purchase costs and VAT. Factors influencing the cost include briefing requirements, standard of specification, site condition and ease of access, the size of the project, and whether the building is single or multi-storey.

6.8 The costs of adapting and refurbishing existing buildings tend to be more variable. They depend on the degree to which the existing structure and services need to be altered and on the amount of existing furniture and equipment that is re-used. In the case of refurbishment requiring, for instance, only

Notes

[1] Zero rating also applies to construction of service ramps and widening doorways or passageways to improve access for people with disabilities, and to certain items of equipment designed solely for use by people with disabilities.

[2] All costs given in this Section are at fourth quarter 1997 national average prices.

redecoration and a few extra service outlets and where there is substantial re-use of existing furniture and equipment, the costs may be less than 10% of the cost of new.

6.9 In larger projects involving extensive structural remodelling and renewal of services and where new furniture and equipment is provided, the costs can approach those of a new building.

6.10 Where there is a choice between building new and either adapting or refurbishing existing accommodation, the latter will usually provide a more economic solution as not only are the capital costs likely to be lower, the overall floor area does not increase, hence additional recurrent costs will be avoided. These can cost approximately £40 per m^2 of gross floor area annually. In addition, the adaptation or refurbishment of an existing building may make it easier to create or maintain appropriate links between existing curriculum areas.

6.11 All projects, whether for new building, adaptation or refurbishment, should be considered in the context of a school's overall long term building development plan.

Furniture and Equipment (F&E)

6.12 In some Local Education Authorities the procurement of furniture and equipment, sometimes both fixed and loose, is managed by the authority's supplies organisation. As an authority-wide service its cost may not always be attributed directly to individual projects.

6.13 Procurement costs will, however, need to be taken into account in projects at schools which do not automatically receive support from an LEA supplies organisation. In these cases it may be necessary to employ the project architect or another agency to provide the procurement service. This can cost up to 6% of the value of the furniture and equipment supplied. In smaller projects this work is sometimes undertaken by the school itself.

Case Study Cost Analysis

6.14 Table 6/1 provides a model cost analysis (based on typical budget prices) of the building work and furniture and equipment for Case Study 3 in Section 5. The costs are subdivided into the main elements together with building costs per m^2. Furniture and equipment costs are given on a room by room basis in Figure 6/2

Building Costs

6.15 The building costs relate to the alterations necessary to refurbish the art area and include for:

- internal demolition and stripping out;
- closing up and forming new openings;
- new internal doors and partitions;
- new floor finishes throughout;
- alterations to networking/computer cabling;
- full redecoration throughout including walls and ceilings;
- new light fittings and switches where necessary;
- alterations to fire alarm systems (including smoke detectors);
- new socket outlets where necessary;
- alterations to security systems;
- adaptations to the heating system;
- alterations to cold water supply/ drainage;
- preliminaries and contingencies.

6.16 No allowance has been made for making good any defects to the building fabric, although there is a contingency sum within the costings to deal with any minor problems should they arise. Costs are at Q497 price levels and exclude VAT.

Furniture and Equipment

6.17 The costs in figure 6/1 allow for entirely new provision, although there will usually be considerable scope for re-use of existing items. Consequently it may be possible to achieve a lower cost than given here. The cost includes fixed and loose furniture: shelving, tables, chairs, cupboards, benching, plan chests, display boards and coat and bag units. A scanner, computers and printers, OHPs (with trolley), a potter's wheel, pug mill and kiln are also included, as is dark room equipment.

Cost comment

6.18 The cost analysis highlights the significance of the cost of furniture and equipment as a proportion of the overall budget. This is particularly the case where activities require specialised furniture and equipment. The building works (excluding fixed furniture) cost of £136/m² is fairly low because only a few alterations are needed, together with new floor finishes and redecoration throughout; alterations to mechanical and electrical services are not too extensive. Furniture and equipment costs per teaching space range from £8,553 for Art 3 to £18,946 for Art 1 for entirely new provision, and significant capital savings can be made if it is feasible to re-use existing items.

Overall Cost Analysis:	Cost £	Cost £/m²
Internal alterations	5,800	20
Internal finishes	12,100	42
Mechanical & electrical work	21,500	74
Fixed furniture (see Figure 6/2)	13,325	46
Building Works Total	**52,725**	**182**
Professional fees (15% of Bldg Wks)	8,000	28
Loose furniture (see Figure 6/2)	23,033	79
Equipment (see Figure 6/2)	25,302	87
Estimated Total Project Cost	**109,060**	**376**

Cost Apportionment

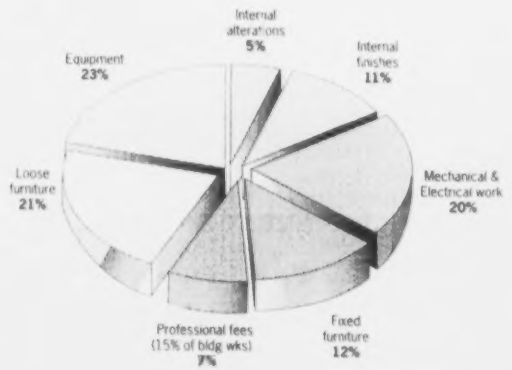


Figure 6/1
Case study cost analysis

Furniture and Equipment Costs

	Fixed furniture £	Loose furniture £	Equipment £	Total £
Art 1 (3D art)	4,612	7,401	6,933	18,946
Art 2 (wet textiles)	4,104	8,287	4,211	16,602
Art 3 (2D art)	2,937	4,361	1,255	8,553
Dark room	1,257	527	2,248	4,032
Faculty office	80	1,360	2,161	3,601
Resource area	335	1,097	8,494	9,926
Total	**13,325**	**23,033**	**25,302**	**61,660**

Figure 6/2
Furniture and equipment costs for each room

BEST COPY AVAILABLE

Appendix 1: Check List

The Art Department

Range of Spaces

An art department may include the following range of spaces.

- **Whole class teaching space(s)** - the number of spaces required can be calculated from the number of art teaching periods.
- A **resource area** where pupils can access information on art and artists through books, slides or CD ROM. This may also be a departmental IT base.
- A **dark room** for photographic processing and in some cases for part of the screen printing process.
- **Storage areas** for materials, books, work in progress etc.
- A **staff base**, sometimes combined with a resource area.

Size of a Teaching Space

The size of an art studio will be affected by group size, the amount of storage in the room, the range and scale of activities taking place and whether sixth form pupils use the space alongside others. A range of 79-115m² for 30 pupils may be used as a guide.

Planning Principles

The quality and level of daylight, views and the location of related teaching spaces should be considered when positioning the art department on the site. Subsequent planning points to consider include:

- accessibility of resource and storage areas;
- the depth of teaching spaces and the possible need for supplementary glazing at high level;
- ground floor access for deliveries and use of outside learning spaces.

Individual Teaching Spaces

The art room environment should reflect the nature of art as a practical and visual discipline. The following characteristics may be considered desirable:

- a visually stimulating environment - volume can be used to create a sense of light and space and upper levels of the space may be a useful additional area for display;
- adequate space for the intended range of activities without conflict;
- an excellent quality of light aiding appreciation of colour and texture;
- sensible zoning of activities eg. clean separate from dirty;
- sufficient provision for display and storage;
- space for preparation and cleaning (often involving several pupils at once);
- a minimum amount of fixed furniture allowing for re-arrangement to suit various activities;
- surface finishes that balance good light reflectance with ease of maintenance.

Storage

When assessing the area requirements for storage, it is useful to consider that:

- pupils' work (of varied shapes and sizes) needs to be stored whilst in progress and once completed;
- a proportion of materials and tools will need to be accessed easily by pupils;
- art teachers collect materials and objects which can be used for display purposes and creating still life arrangements;
- the storage of certain materials is governed by health and safety regulations eg. clay and plaster.

Furniture and Equipment

Furniture should allow the art room to be re-arranged easily to accommodate a variety of activities. The following points are useful to note.

- Tables should be easy to move but sufficiently robust to withstand frequent re-arrangement. Certain clay preparation activities require a very sturdy table.
- Different table heights suit different activities. A standing height (850mm recommended) is most common in a general art room. A sitting height (700mm recommended) may be preferred for textiles work.
- A removable screen printing surface can be used as an alternative to a specialist table where space is at a premium.
- For sitting height tables, stackable moulded plastic chairs provide comfort and mobility. Adjustable chairs may be desirable for use with computers.
- Stools for standing height work should be comfortable and may include a backrest.
- If storage units are mobile, they can be moved to provide additional horizontal display surface.
- Trays provide useful storage of small items and can be transferred from cupboard to trolley.
- There should be adequate provision for portfolio storage eg. an A1 sized unit with vertical divisions.
- Deep shelves in store rooms are useful for large paper sizes and portfolios.
- Bins, crates and trolleys provide valuable storage for materials and resources.

Services and Environmental Design

Any installation must comply with the relevant regulations. The following are of particular note in art spaces.

- Fixed equipment such as a potter's wheel must be permanently wired and have an isolating switch nearby.
- There should be a light outside a kiln room to indicate when the kiln is firing.
- Regulations cover the use of bottled gas and compressed air.
- Hot water should be provided to at least one (preferably all) classroom sinks, in addition to cold.
- Certain art activities require good levels of ventilation and their use should be assessed under the COSHH regulations.
- Blown air heating systems should be avoided because of the dusty nature of certain activities.
- The amount of daylight that reaches a space is affected by room orientation, position and quantity of glazing and outside obstructions. Within the room, the reflectance of the surfaces can have a significant effect on the level of light.
- Directional lighting is useful for both permanent wall displays and temporary still life displays.

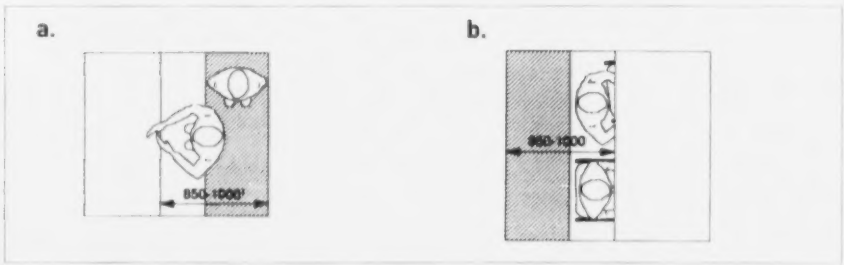
Cost Guidance

It is are worth considering that:

- professional fees can add a further 10% to 15% to the cost of building work;
- the local customs and excise officer should be consulted on the question of VAT;
- the cost of a new art block can cost from £850 to £1150 per m^2. The cost of adapting existing spaces may be less than half of this.

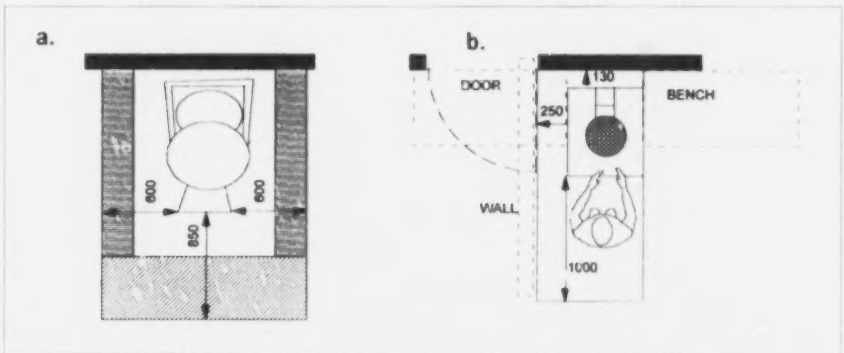
Appendix 2: Space around Furniture & Equipment

Figure A2/1
a. Area around side bench
b. Area around table



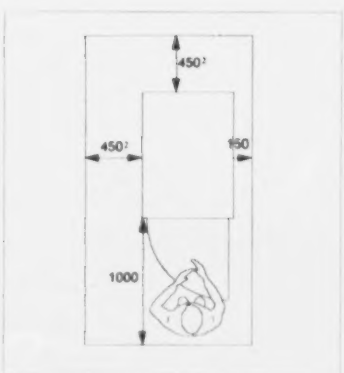
Note
[1] All dimensions in millimetres. Allow upper end of range on parts of bench which contain sinks or plan chests.

Figure A2/2
a. Area around potter's wheel
b. Area around pug mill



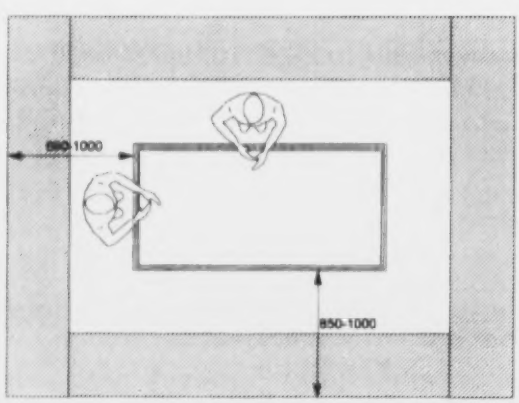
indicates alternative structure/furniture

Figure A2/3
Area around kiln



Note
[2] These dimensions allow ease of access for maintenance. If space is restricted this can be reduced to 150mm and the kiln jacked up and moved forward when required.

Figure A2/4
Area around screen printing table

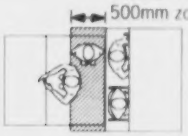


Key

Overlap of space allocated 500mm

Overlap of space allocated 250mm

Shared 500mm zone



BEST COPY AVAILABLE

Appendix 3: Glossary

APPLIQUÉ: applying small sections of fabric or other material to a textile base.

BATIK: a method of using wax to block out patterns on fabric before dyeing.

BLUNGER: machine for mixing glazes (also 'miter').

BS: British Standard.

CD ROM: Compact Disc Read Only Memory, computerised reference material.

COSHH: Control of Substances Hazardous to Health.

DAMP CUPBOARD: cupboard lined with a material such as polythene sheet to provide a moist environment for storing clay.

DAYLIGHT FACTOR (DF): The illuminance received at a point indoors, from a sky of known or assumed luminance distribution, expressed as a percentage of the horizontal illuminance outdoors from an unobstructed hemisphere of the sky. Direct sunlight is excluded from both values of illuminance.

D&T: Design and Technology.

FREQUENCY OF USE(%): The average amount of time that a space is used, expressed as a percentage of the total number of teaching periods available per week.

F&E: furniture and equipment.

GROG: a vitrifying ingredient added to clay to help prevent cracking.

ILLUMINANCE LEVEL: measure of light over an area – lux (lumens/m^2).

IT: Information Technology – the subject taught in schools and the equipment associated with it.

KEY STAGE (KS): The statutory school years are divided into four phases which mark stages of development. These approximate to age as follows:

- KS1: age 5 - 7
- KS2: age 7 - 11
- KS3: age 11 - 14
- KS4: age 14 - 16

LEA: Local Education Authority.

MDF: Medium density fibreboard.

MIDDLE SCHOOLS: Middle schools may be either 'middle deemed primary' with an age range of 8-12 or 'middle deemed secondary' with an age range of 9-13.

OHP: Overhead Projector.

PLASTER BATS: Plaster trays on which lumps of clay are dried out.

PUG MILL: machine which reconstitutes used clay.

RCD: Residual Current Device (for automatic electricity cut-off in case of a fault to earth).

SCREEN PRINTING: using framed mesh screens to contain a stencil through which dye or ink is pressed onto fabric or paper.

SQUEEGEE: a strip of rubber mounted in a wooden frame which is used to press ink through a mesh screen onto fabric or paper when printing.

STILL LIFE: Objects arranged as a set piece for pupils to draw/paint.

SUITE: In this publication a suite of spaces refers to an identifiable group of spaces.

TEACHING PERIOD: Schools divide up the week in different ways. Common patterns are:

40 periods of 35 minutes;

25 periods of 60 minutes.

VDU: Visual Display Unit, the computer screen.

VCR: Video Cassette Recorder.

WEDGING: process of banging lumps of clay down onto a hard surface to remove air pockets.

WORKPLACE: a place to work, ie. table space and seat, for one pupil.

YEARS 7 - 11: Secondary school years are numbered from 7 (first year) to 11 (end of statutory schooling). The sixth form is sometimes referred to as years 12 and 13.

Bibliography

General Regulations and Guidance

The Education (School Premises) Regulations 1996. (Statutory Instrument 1996 No. 360). London: HMSO, 1996. ISBN 0 11 054152 9.

Department for Education and Employment. **The 1996 School Premises Regulations.** (Circular number 10/96). London: DfEE, 1996.

Department for Education and Employment. **Area Guidelines for Schools.** (Building Bulletin 82). London: HMSO, 1996. ISBN 0 11 270921 4.

Department for Education and Employment. **1997 Constructional Standards.** London: DfEE, 1997.

Department of the Environment and The Welsh Office. **The Building Regulations 1991. Approved Document B: fire safety.** London: HMSO, 1991. ISBN 0 11 752313 5.

Furniture and Equipment

British Standards Institution. **BS 5873: Educational furniture.** Milton Keynes: BSI, in four parts, from 1980.

British Standards Institution. **BS 4875: Strength and stability of furniture.** Milton Keynes: BSI, in eight parts, from 1985.

British Standards Institution. **BS 4163: 1984. Code of practice for health and safety in workshops of schools and similar establishments.** Milton Keynes: BSI, 1984. ISBN 0 580 13866 6.

British Standards Institution. **BS 6396: 1995. Specification for electrical systems in office furniture and office screens.** Milton Keynes: BSI, 1995. ISBN 0 580 24736 8.

Department for Education. **Educational furniture database: setting the standards.** (Broadsheet 31). DFE, 1994.

The Management of Health and Safety at Work Regulations 1992. (Statutory Instrument 1992 No. 2051). London: HMSO, 1992. ISBN 0 11 025051 6.

Services and Environmental Design

The Chartered Institution of Building Services Engineers. **Code for interior lighting 1994.** London: CIBSE, 1994. ISBN 0 900953 64 0.

The Chartered Institution of Building Services Engineers. **Window design.** London: CIBSE, 1987. ISBN 0 900953 33 0.

Department for Education and Employment. **Guidelines for environmental design in schools (Revision of Design Note 17).** (Building Bulletin 87). London: The Stationery Office, 1997. ISBN 011 271013 1.

Department of the Environment. **Model Water Byelaws (1986 edition).** HMSO, 1986. ISBN 011 751887 5.

The Electricity at Work Regulations 1989. (Statutory Instrument 1989 No. 635). London: HMSO, 1989. ISBN 0 11 096635 X.

British Standards Institution. **BS 7671: 1992 Requirements for electrical installations. IEE Wiring Regulations. Sixteenth edition.** Milton Keynes: BSI, 1992. ISBN 0 85296 557 5.

British Gas & Department of Education & Science. **Guidance notes on gas safety in educational establishments.** London: British Gas, 1989.

The pressure systems and transportable gas containers regulations 1989. (Statutory Instruments 1989 No. 2169). London: HMSO, 1989. ISBN 0 11 098169 3.

Health and Safety Executive. **A guide to the pressure systems and transportable gas containers regulations 1989.** (Health and Safety series booklet HS(R) 30). London: HMSO, 1990. ISBN 0 11 885516 6.

Health and Safety

Department for Education. **A guide to safe practice in art and design.** London: HMSO, 1995. ISBN 0 11 270896 X.

Health and Safety Commission. **Management of health and safety at work: Management of Health and Safety at Work Regulations 1992: approved code of practice.** London: HMSO, 1994. ISBN 0 7176 0421 8.

The Control of Substances Hazardous to Health Regulations 1994. (Statutory Instrument 1994 No. 3246). London: HMSO, 1994. ISBN 0 11 043721 7.

Health and Safety Executive. **COSHH: guidance for schools.** London: HMSO, 1989. ISBN 0 11 885511 5.

Health and Safety Executive. **A step by step guide to COSHH assessments.** London: HMSO, 1993. ISBN 0 11 886379 7.

Health and Safety Executive. **Electrical safety in schools (Electricity at Work Regulations 1989).** Revised edition. (Guidance Note GS 23). London: HMSO, 1990. ISBN 0 11 8854267.

Health and Safety Executive. **Storage and use of highly flammable liquids in educational establishments.** Leaflet. Code number: IAC (L) 15. HSE, 1986. (Out of print).

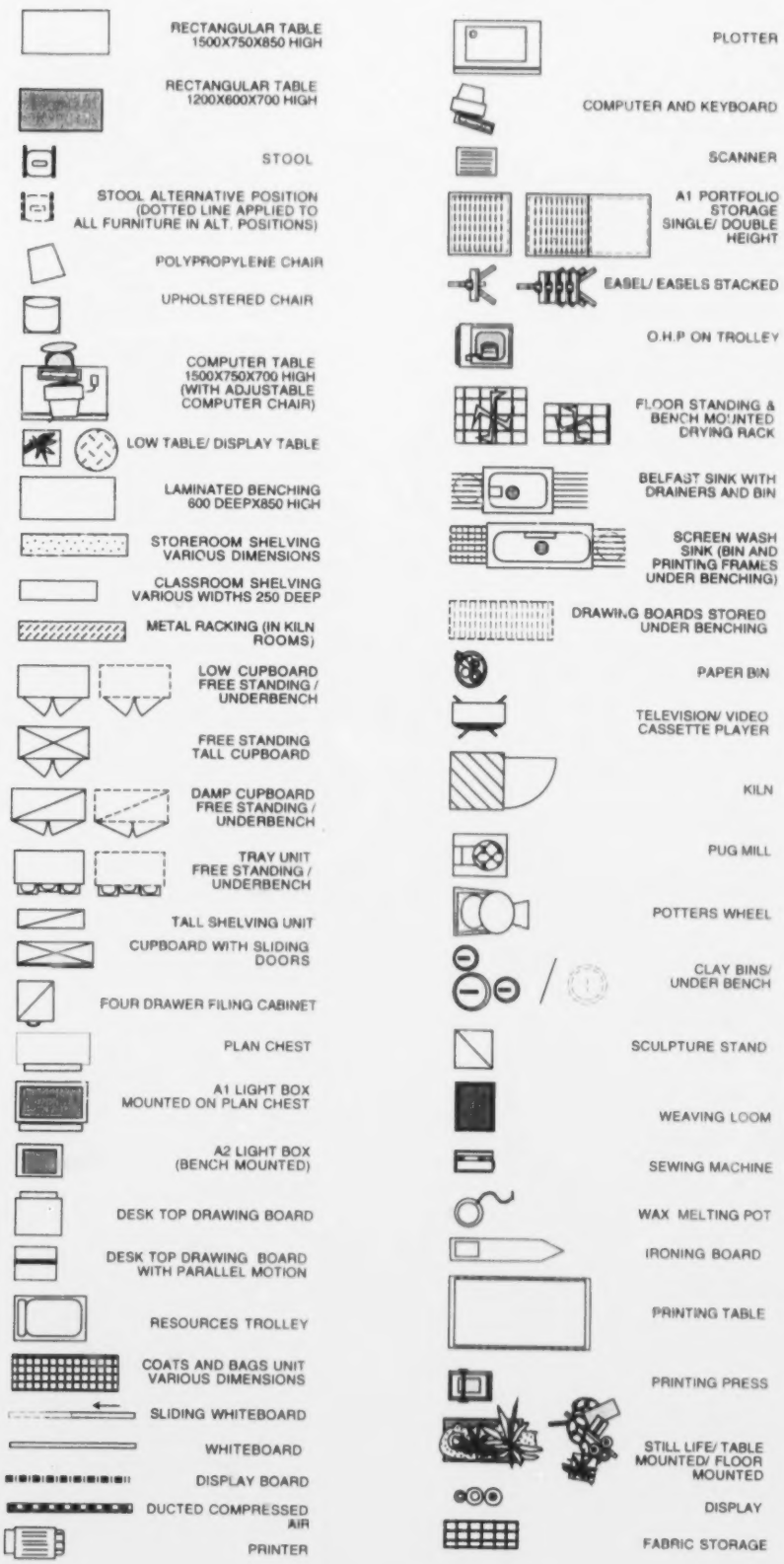
Institute of Ceramics. **Health and safety in ceramics: a guide for educational workshops and studios.** 3rd. edition. Stoke-on-Trent: Institute of Ceramics, 1991. ISBN 0 901092 42 8.

Forthcoming Publication

Department for Education and Employment. **Lighting Design for Schools.** Date of publication to be announced.

BEST COPY AVAILABLE

Key to symbols



Note: All dimensions in millimetres

BEST COPY AVAILABLE

Published by The Stationery Office and available from:

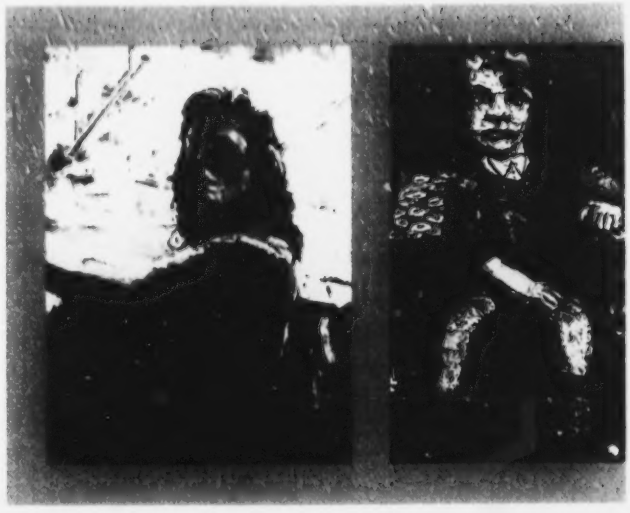
The Publications Centre
(mail, telephone and fax orders only)
PO Box 276, London SW8 5DT
General enquiries 0171 873 0011
Telephone orders 0171 873 9090
Fax orders 0171 873 8200

The Stationery Office Bookshops
123 Kingsway, London WC2B 6PQ
0171 242 6393 Fax 0171 242 6394
68–69 Bull Street, Birmingham B4 6AD
0121 236 9696 Fax 0121 236 9699
33 Wine Street, Bristol BS1 2BQ
0117 926 4306 Fax 0117 929 4515
9–21 Princess Street, Manchester M60 8AS
0161 834 7201 Fax 0161 833 0634
16 Arthur Street, Belfast BT1 4GD
01232 238451 Fax 01232 235401
The Stationery Office Oriel Bookshop
The Friary, Cardiff CF1 4AA
01222 395548 Fax 01222 384347
71 Lothian Road, Edinburgh EH3 9AZ
0131 228 4181 Fax 0131 622 7017

The Stationery Office's Accredited Agents
(see Yellow Pages)

and through good booksellers

£16.95



ISBN 0-11-271029-8

9 780112 710295 >

BEST COPY AVAILABLE